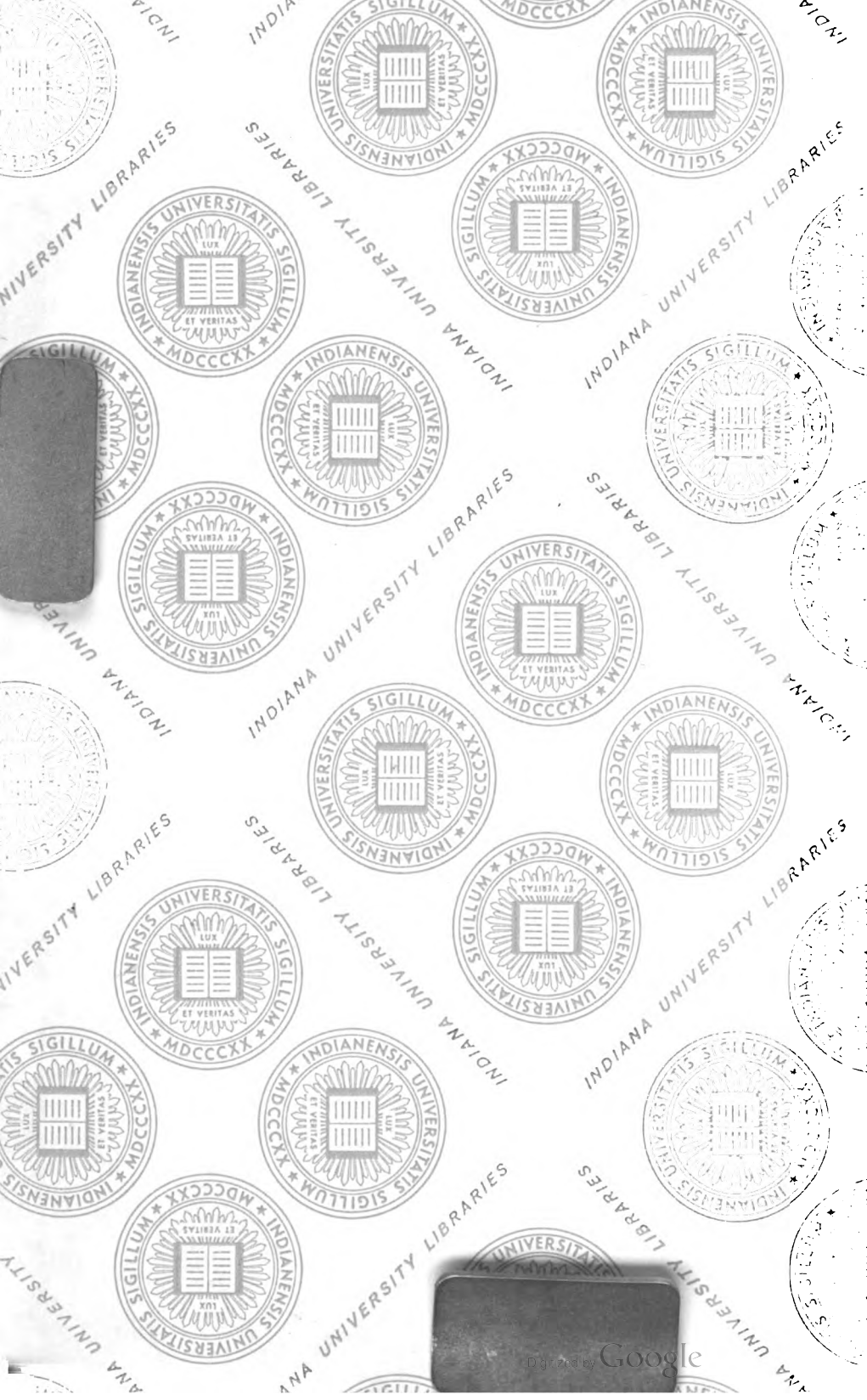
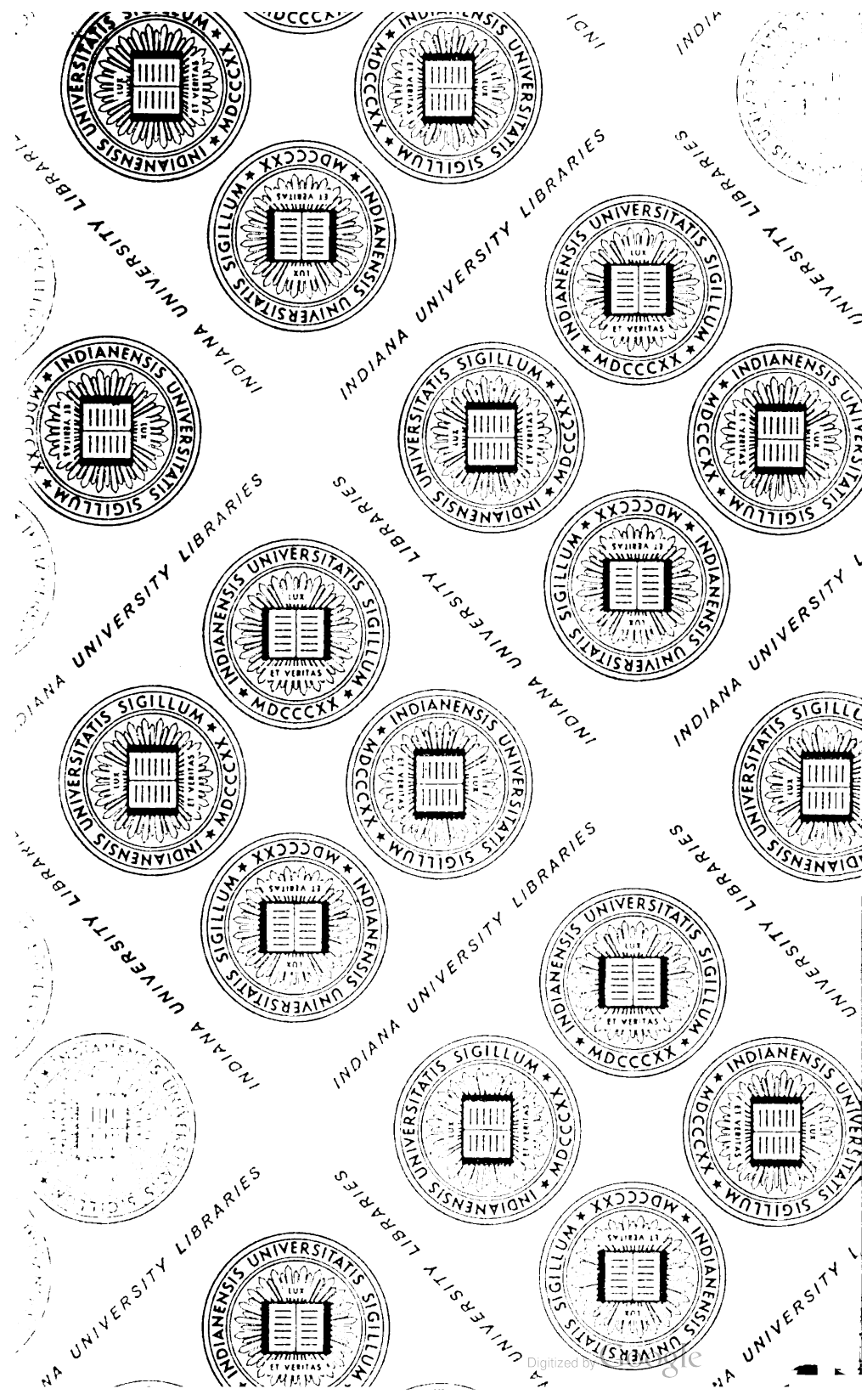

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INVESTIGATION OF THE TELEPHONE INDUSTRY IN THE UNITED STATES

LETTER

FROM

H. C. -- THE CHAIRMAN
FEDERAL COMMUNICATIONS COMMISSION

TRANSMITTING

A REPORT OF THE FEDERAL COMMUNICATIONS
COMMISSION ON THE INVESTIGATION OF THE
TELEPHONE INDUSTRY IN THE UNITED STATES,
AS UNANIMOUSLY ADOPTED BY
THE COMMISSION



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FEDERAL COMMUNICATIONS COMMISSION,
Washington, D. C., June 14, 1939.

To the SPEAKER OF THE HOUSE OF REPRESENTATIVES:

Pursuant to the provisions of Public Resolution No. 8, Seventy-fourth Congress, there is transmitted herewith the report of this Commission on the investigation of the telephone industry in the United States, as unanimously adopted by the Commission.

FEDERAL COMMUNICATIONS COMMISSION,
FRANK R. McNINCH, *Chairman.*

JUNE 14, 1939.

To the PRESIDENT OF THE UNITED STATES SENATE:

Pursuant to the provisions of Public Resolution No. 8, Seventy-fourth Congress, there is transmitted herewith the report of this Commission on the investigation of the telephone industry in the United States, as unanimously adopted by the Commission.

FEDERAL COMMUNICATIONS COMMISSION,
(Signed) FRANK R. McNINCH, *Chairman.*

III

FEDERAL COMMUNICATIONS COMMISSION

REPORT ON TELEPHONE INVESTIGATION

[Pursuant to Public Res. No. 8, 74th Cong.]

The following report is respectfully submitted:

**FEDERAL COMMUNICATIONS COMMISSION,
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GEORGE HENRY PAYNE.

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THAD H. BROWN.

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INTRODUCTION

On March 15, 1935, the President approved a joint resolution of the Congress,¹ "authorizing the Federal Communications Commission to investigate and report on the American Telephone & Telegraph Co. and all other companies engaged directly or indirectly in telephone communication in interstate commerce, including all companies related to any of these companies through a holding company structure, or otherwise." The purpose of the resolution was to secure information on the telephone industry, particularly the American Telephone & Telegraph Co., "in aid of legislation by the Congress and for the use of governmental agencies, including State regulatory commissions, for the information of the general public, as an aid in providing more effective rate regulation, and for other purposes in the public interest." The resolution was drawn in broad terms, authorizing the Commission to investigate and report to the Congress on the following general matters, among others, relating to interstate telephone operations: Corporate and financial history; capital structure; inter-company relationships; service contracts; accounting methods; apportionment of investment, revenues, and expenses between State and interstate operations; policies and practices; methods of competition; the effect of monopolistic control upon the reasonableness of telephone rates and charges; and the reasons for the failure generally to reduce telephone rates and charges during the years of declining prices.

The resolution appropriated the sum of \$750,000 to carry out the mandate of Congress. Two additional appropriations were made, one for \$400,000, effective June 22, 1936, and one for \$350,000, effective February 9, 1937.²

The benefits to users of telephone service since the passage of the resolution may be summarized as follows: Long distance telephone rates have been reduced substantially. Subsequent to the issuance of an order of investigation of the interstate toll rate structure by the Telephone Division on September 9, 1936, and as the result of negotiations between representatives of this Commission and the American Telephone & Telegraph Co., long distance telephone rates were reduced on a basis equivalent to an estimated saving to the public of \$12,235,000 per annum. Other reductions of lesser amounts were made effective during the period from June 1, 1935 to January 15, 1937, the total effect of all reductions being estimated to amount to about \$24,000,000 per annum. Other benefits to customers of the telephone system may be attributable to some extent to the activities of the Commission such as (1) revision of wire service charges to radio stations; (2) reduction or discontinuance of extra charges for the so-called hand-set telephone; (3) reduction in the interest rate paid by

¹ Public Res. 8, 74th Cong., 49 Stat. 43. A copy of the resolution is set out in appendix 1.

² Of this sum, \$150,000 was set aside by the Federal Communications Commission to support a technical unit designated as a Rate and Research Department, to study general telephone rate problems. A brief discussion of the work of this Department is included in ch. I, pt. II, of this report.

the associated companies on advances from the American Telephone & Telegraph Co.; and (4) liberalization of the policy of the Western Electric Co. in selling certain telephone devices to connecting companies.

The work of the investigation was confined largely to a study of the American Telephone & Telegraph Co. and certain of its subsidiary and related companies. The resolution directed specific attention to the American Telephone & Telegraph Co., although the activities of all telephone companies operating interstate were included therein. Due to limitations of time, funds, and personnel, such a comprehensive study of all companies was not practicable. Telephone companies other than the Bell System Cos. have been studied only to the extent that their activities have had a direct bearing on the activities of the American Co. Inasmuch as the latter company controls more than 85 percent of the telephone business in this country,³ the investigation made covers the larger part of the telephone industry.

Pursuant to General Order No. 1, dated July 17, 1934, organizing the Divisions of the Commission, the Telephone Division had and exercised the jurisdiction of the Commission over all matters relating to telephone communication, including the conduct of the investigation. The Telephone Division, accordingly, by its Order No. 13,⁴ adopted on March 4, 1936, prescribed the procedure to govern the conduct of the investigation, and the investigation was conducted by the Telephone Division in accordance with the procedure so prescribed.

At the close of the hearings it was announced that the American Telephone & Telegraph Co. would be permitted to submit statements in writing pointing out any inaccuracies in factual data or statistics in the reports introduced in the hearings or in any testimony in connection therewith, provided that such statements were confined to the presentation of facts and that no attempt would be made therein to draw conclusions therefrom. It was further announced that the statements to be submitted should be properly verified and should refer specifically by page number to the matter in the report or transcript sought to be corrected. September 30, 1937, was fixed as the time limit within which such statements might be filed.

The company submitted a series of unsigned, unattested memoranda designated as "comments" upon the reports submitted in evidence by members of the investigation staff. The documentary material submitted by the company under the designation "Comments" did not conform to the requirements laid down by the Telephone Division as outlined above. The comments were not verified; they were not filed within the time limit fixed; and they contained much argumentative material and unsupported assertions in addition to corrections of factual or statistical data. Inasmuch as they did not comply with the Telephone Division requirements as to the matter to be contained therein they were not made a part of the record as requested by the company. These comments were, however, considered, insofar as they related to corrections of factual or statistical data, in the preparation of both the proposed report and this report to the Congress.

³ See testimony of Walter S. Gifford, president of the American Telephone & Telegraph Co., in hearings before the Committee on Interstate and Foreign Commerce on H. R. 8301, 73d Cong., 2d sess.

⁴ A copy of Telephone Division Order No. 13 is included as appendix 4.

On October 14, 1937, the Commission directed Commissioner Paul A. Walker, chairman of the Telephone Division to prepare a report of the telephone investigation, pursuant to Public Resolution No. 8, for submission to the Congress. The Telephone Division of the Commission was abolished on November 15, 1937. A report was prepared under the direction of Commissioner Walker and was submitted on February 23, 1938, to the Commission for adoption. That report was subsequently forwarded to the Congress and has since been printed as the "Proposed Report, Telephone Investigation".⁵

Subsequent to the submission of the proposed report, the Commission authorized the filing of a brief by the Bell System Cos. and also oral argument on the proposed report, if desired. A brief was filed but the companies did not avail themselves of the opportunity for oral argument. The brief submitted on behalf of the Bell System Cos. has been considered in the preparation of this report.

The subject matter of the report is treated under two general subdivisions. Part I of the report seeks to present the facts developed by the investigation without conclusions or comment except insofar as this may be necessary to explain the facts. Part II contains a discussion of current regulatory problems; summary and findings; and conclusions and recommendations of the Commission.

⁵ Proposed Report, Telephone Investigation, U. S. Government Printing Office, 1938.

PART I

DEVELOPMENT AND ORGANIZATION
POLICIES AND PRACTICES
AND OPERATING RESULTS OF
THE BELL SYSTEM

xxi

PREFACE

SCOPE OF THE BELL SYSTEM

The Bell System, with over \$5,000,000,000 of consolidated gross assets under the direct or indirect control of American Telephone & Telegraph Co., constitutes the largest aggregation of capital and resources that has ever been controlled by a single private company at any time in the history of business. The system consists of over 200 corporations directly and indirectly controlled by the American Telephone & Telegraph Co. This company controls between 80 and 90 percent of local telephone service¹ and 98 percent of the long distance telephone wires of the United States,² including practically all wire facilities used in radio program transmission.³ The Bell System owns, leases, and operates about 15,000 teletypewriter machines (as compared with over 17,000 machines controlled by the telegraph companies) and gives the only teletypewriter exchange service (TWX) in the country. In addition, there are some 3,500 Morse telegraph machines used in the service of Bell Companies or leased for private line service. Transoceanic two-way radiotelephone service is a monopoly of the Bell System.⁴ A large part of press news and telephotograph service makes use of Bell plant and service. Thus, with the exception of wire and radio telegraph service, most of the commercial communication services by wire and radio, including the domestic network for the transmission of broadcasts, is controlled by the American Telephone & Telegraph Co.⁵

The Bell System also manufactures, in the plants of Western Electric Co., a subsidiary of the American Co., approximately 90 percent of the telephone equipment produced in the United States. Western Electric not only manufactures some 90 percent of the telephone equipment produced in the United States, but a good part of the rest manufactured by others is purchased by Western for associated Bell Telephone companies. Western Electric formerly acted as a purchasing agent for and now sells to the associated companies practically all of their requirements of equipment and supplies of other than Western Electric manufacture.⁶

The American Telephone & Telegraph Co. controls the supply of teletype machines, through Teletype Corporation, which it acquired in 1930 and transferred to its subsidiary, the Western Electric Co. Many motion-picture producers in the United States have, since 1926, used Western Electric sound-recording equipment; and a large number of motion-picture houses use sound reproduction equipment.⁷

¹ The Bell System controls 83 percent of telephone stations in service, 91 percent of total telephone plant and 90 percent of total telephone revenues in the United States. See exhibit 50, tables 1, 2, 3, and 3a, pp. 6, 8, 10, and 11, respectively.

² *Ibid.*, table 4, p. 15.

³ See *infra*, ch. 13.

⁴ See *infra*, ch. 12, sec. 2.

⁵ For a discussion of centralization of control in the Bell System, see ch. 4.

⁶ For a further discussion of this relationship, see *infra*, p. 30 and ch. 10, p. 315.

⁷ There were 5,319 motion-picture houses on June 29, 1935, which were using Western Electric equipment. See exhibit 1946-C, appendix B.

manufactured by Western Electric Co. and leased from a subsidiary,⁸ Electrical Research Products, Inc. (E. R. P. I.). Electrical Research Products, Inc., competes for this business⁹ with Radio Corporation of America and others. In addition to the manufacture, lease, and servicing of recording and reproducing equipment for picture exhibition, E. R. P. I. has engaged directly or through subsidiaries in the consulting business with reference to technical problems in motion-picture production, has serviced reproducing equipment in theaters, and has undertaken to promote and finance industrial and educational pictures. In some instances, it has also advanced millions of dollars to producers and exhibitors of sound motion pictures using Western Electric equipment.

The growth of the Bell System and its success in occupying almost the entire telephone field in the United States has been founded from its earliest days largely upon patents. This has been true not only in the telephone field, but in other fields as well.¹⁰ The Bell System owns or controls patents for instruments of many kinds used in the electrical arts, surgery, medicine, etc. Many of these nontelephonic products are manufactured and sold or leased by Western Electric Co. or its subsidiaries. These products have from time to time comprised radio transmitting and receiving equipment, therapeutic devices, audiophones, public-address equipment for indoor and outdoor use, photoelectric cells, oscillators, race-timing equipment, magnetic alloys, and permalloy. With respect to some of these devices outside the field of telephony, Western Electric Co. has had a powerful or dominating, if not always controlling, position by virtue of exclusive manufacturing rights, control of patents, or exclusive licensing agreements.

In addition to operation of telephone service and manufacture of telephone equipment and apparatus and a variety of nontelephonic products, the Bell System has been engaged for a long time in research and development in the field of electrical transmission and acoustics. This work was first carried on by Western Electric Co. and the American Co. Since 1925 the Bell Telephone Laboratories, Inc.,¹¹ has carried on research in a variety of specialized fields, such as electronic physics, chemistry, magnetics, optics, radio, applied mathematics, speech and hearing, conversion of energy between acoustic and electrical systems, the generation and modulation of electrical currents, and instruments for the transmission of intelligence. It has carried on experiments also in the development and design of apparatus for wire or radio telephony, broadcasting, telegraphy, sound recording and reproduction, telephoto service, and therapeutic equipment. Materials and manufacturing methods are studied at the Bell Laboratories, and specifications are prepared which the American Co. standardizes throughout the Bell System.¹²

The economic influence of the Bell System is felt in many ways. Its policies affect the interests of millions of telephone users who obtain their service from the more than 15,000,000 stations of the companies constituting the Bell System. It is the largest private em-

⁸ See sec. 3 of this chapter for a brief description of Western Electric subsidiaries.

⁹ For a discussion of Bell System policies and practices in this field, see *infra*, ch. 14.

¹⁰ For a discussion of Bell System patent policies, see *infra*, ch. 8.

¹¹ Jointly controlled by American Telephone & Telegraph Co. and its subsidiary, Western Electric Co.

¹² For a discussion of Bell System research policies, see *infra*, ch. 7.

ployer of labor. In 1929 it employed approximately 450,000 people; in 1937, about 320,000 people. The number of investors in Bell System bonds and stocks is very large, approximating three-fourths of a million. Even though the average holdings are very small, in the aggregate they represent a substantial public interest in the affairs of the system. As a purchaser of goods and services, the system has broad ramifications. Annual expenditures of the Bell System for goods and services total hundreds of millions of dollars and affect many classes of labor and many raw materials. As a bank depositor using more than a fourth of the active banks of the United States, as a purchaser of insurance, and in other commercial relations, the Bell System affects widely the economic life of the country.

CHAPTER 1

CORPORATE HISTORY OF THE BELL SYSTEM

SECTION 1. CORPORATE HISTORY OF THE PARENT COMPANY

The Bell System, in its present organization and scope, is the result of a continuous development of over 60 years, spanning the life of telephony as a means of human communication. In this chapter a brief history is given of the corporate vehicles which were employed from time to time to carry out the aims of Bell System managements. The material presented is in the main descriptive. Reference to policy matters is made only insofar as it is necessary to explain corporate history. The purpose of this corporate history is to give a background to the organization and structure of the system through which the policies described later in this report have been effectuated.

Corporate History (1875-1900).

The parent organization of the Bell System is today the American Telephone & Telegraph Co. This company controls, through stock ownership and contracts, the major portion of the telephone business in the United States, in addition to other activities described above. The American Co. has been the principal holding company in the Bell System only since 1900, although it was organized in 1885. From the date of its organization to 1900, it was engaged principally in long-distance telephone communication. During that period it operated as a subsidiary of the American Bell Telephone Co., which was the controlling company in the Bell System from 1880 to 1900.¹³

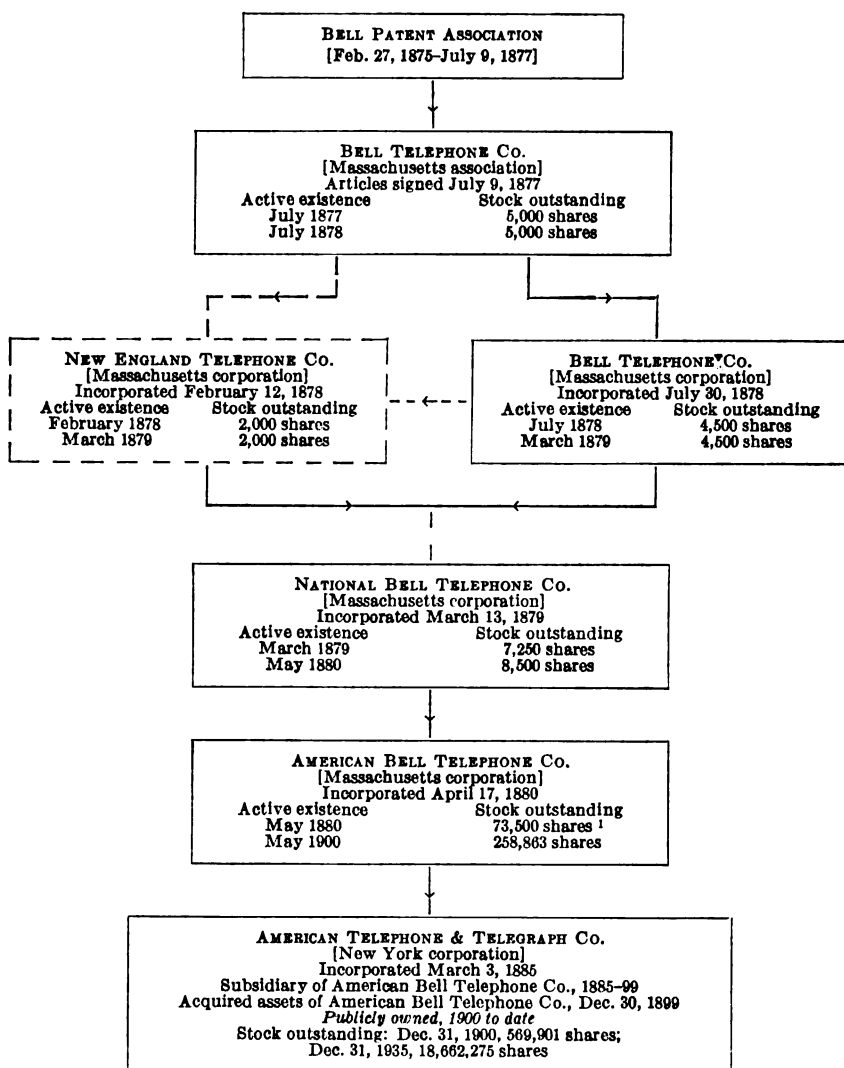
Alexander Graham Bell obtained his basic patent on a telephone on March 7, 1876.¹⁴ Claim 5 of this patent covered "the method of, and apparatus for, transmitting vocal or other sounds telegraphically, as herein described, by causing electrical undulations, similar in form to the vibrations of the air accompanying the said vocal or other sounds, substantially as set forth." A second patent was issued to Bell on January 30, 1877, which covered the structural aspects of the magneto telephone in considerable detail.¹⁵ After the settlement with Western Union in 1879, these two patents formed the basis of the Bell System monopoly in the telephone field which existed until the expiration of these patents in 1893 and 1894.

¹³ The succession of the Bell System parent companies is given graphically in chart 1, p. 2. Pertinent data supporting chart 1 are summarized in table 1, p. 4.

¹⁴ Patent No. 174465.

¹⁵ Patent No. 186787.

CHART 1

HISTORICAL CHART OF THE PARENT ORGANIZATIONS
OF THE BELL SYSTEM

Legend: ———— Transfer of assets.

- - - - - Licensee company.

NOTE.—All stock of corporations is \$100 par.

¹ Includes 14,000 shares of trustee stock held by National Bell Telephone Co.

Source: Exhibit 2096-A, chart 1, p. 13.

* At first Alexander Graham Bell had to "sell" the idea of the telephone to an incredulous public. After his invention was conclusively proved to be practicable, however, other inventors and financial interests immediately became interested in the establishment of telephone communication. It is reported that, in 1877, the Western Union Telegraph Co. declined to buy Bell's patents for the sum of \$100,000.¹⁶ A year later, however, realizing the competitive potentialities of telephones in the local telegraph field, the Western Union organized a subsidiary which acquired certain patents from Elisha Gray, Thomas A. Edison, Dolbear, and others, and entered the telephone business in competition with the struggling Bell interests.¹⁷

During the latter part of 1879 the competition of the powerful Western Union interests was eliminated by a contract dated November 10, 1879.¹⁸ Numerous other competitors also were eliminated as a result of the forceful and vigorous manner in which the Bell interests enforced their patent rights through infringement suits. The question of the priority of Bell patents was finally adjudicated in favor of the Bell interests in 1888 by the Supreme Court of the United States.¹⁹

From 1875 to 1900, several predecessors of American Telephone & Telegraph Co. were organized in succession, to exploit commercially the new means of communication. These predecessor companies will be described briefly.

Bell Patent Association (1875).—The first germ of a business organization for the commercial development and exploitation of the telephone appears to have been a verbal offer, made by Thomas Sanders in the autumn of 1874, to supply Alexander Graham Bell with money needed for his experiments, which were then being conducted in Boston. In return for his assistance, Sanders was to receive a share in any patent rights which might result from those experiments. Gardiner G. Hubbard made a similar offer to Bell a short time later. These two offers and Bell's acceptances were embodied in a written agreement, dated February 27, 1875, which provided that Sanders and Hubbard were each to furnish one-half of the money needed for the perfecting and patenting of Bell's inventions, and that the three should together own any patents resulting from Bell's researches. This agreement provided also that if the inventions proved to have commercial value, a company was to be organized to control and manage the patents,²⁰ each of the three owning one-third of the stock of the new company.

¹⁶ See *The Birth and Babyhood of the Telephone*, by Thomas A. Watson, p. 24.

¹⁷ *New York Investigation*, 1910, pp. 416-417, 644. The extent of this competition and the settlement in 1879 will be discussed elsewhere. See ch. 5.

¹⁸ See ch. 5. For copy of this contract, see exhibit 1360-C, appendix 7.

¹⁹ 126 U. S. 1.

²⁰ For copy of the memorandum of agreement signed by the three Bell associates, see exhibit 1360-C, appendix 1.

TABLE 1.—*Summary data on the corporate history of American Telephone & Telegraph Co. and predecessors, years 1875–1935, inclusive*

Item	Name (a)	Date of organization ¹ (b)	Date of termination as active organization (c)	Authorized capital		
				Par value of each share (d)	Number of shares	
					Original (e)	Final (f)
1	Bell Patent Association.....	Feb. 27, 1875	July 1877..	(²)	(²)	(²)
2	Bell Telephone Co. (Massachusetts).	July 9, 1877	July 1878..	(²)	5,000	5,000
3	New England Telephone Co. (Massachusetts).	Feb. 12, 1878	March 1879.	\$100	2,000	2,000
4	Bell Telephone Co. (Massachusetts).	July 30, 1878	do.....	100	4,500	4,500
5	National Bell Telephone Co. (Massachusetts).	Mar. 13, 1879	May 1880.	100	8,500	8,500
6	American Bell Telephone Co. (Massachusetts).	Apr. 17, 1880	December 1899.	100	100,000	500,000
7	American Telephone & Telegraph Co. (New York).	Mar. 3, 1885 ⁴	Present company.	100	1,000	25,000,000

¹ Date on which the certificate of incorporation was filed and recorded by the secretary of the State or Commonwealth, except for the two associations.

² Only an association, not a joint-stock company.

³ No stated par value. The organization was an unincorporated Massachusetts voluntary association.

⁴ Originally organized as the Long Lines subsidiary of American Bell Telephone Co., American Telephone & Telegraph Co. became the controlling company of the Bell System upon consolidation with American Bell as of Dec. 30, 1899.

⁵ The last increase in authorized capital stock was effected by a certificate filed Apr. 1, 1931, with the secretary of state of New York.

Source: Exhibit 1360-A, table 1, p. 8.

Bell Telephone Co. (Massachusetts association) (1877).—After the basic Bell patents were granted, a new company was organized for the purpose of commercial exploitation. The Bell Telephone Co., a Massachusetts voluntary association, was formed on July 9, 1877, with Gardiner G. Hubbard as trustee. All three members of the Bell Patent Association assigned their rights under the Bell patents to the trustee, who had the responsibility of developing them commercially. The trustee agreed to conduct the telephone business of the Bell Telephone Co. under regulations established by a board of managers, which consisted of Gardiner G. Hubbard, Alexander Graham Bell, Thomas Sanders, Thomas A. Watson, and Charles E. Hubbard.²¹

New England Telephone Co. (1878).—Hubbard and Sanders were financing Bell's experiments and the early exploitation of the telephone. Their resources, however, were insufficient, particularly when a year later, in 1878, Western Union Telegraph Co. invaded the field of telephone communication through the Gold & Stock Co. and the American Speaking Telephone Co. The Bell interests were in dire need of financial assistance. This was obtained from friends and relatives of Thomas A. Sanders. Among the new supporters were George L. Bradley, Charles S. Bradley, William G. Saltonstall, George Z. Silsbee, and later, Richard S. Fay and William H. Forbes. A new company, the New England Telephone Co., was organized under the laws of Massachusetts in February 1878 for the purpose of developing the telephone commercially in New England. This company had a

²¹ The 5,000 shares of the Bell Telephone Co., were divided as follows: Gardiner G. Hubbard, 1,387; Gertrude McC. Hubbard, wife of Gardiner G., 100; Mabel G. Bell, daughter of Gardiner G. and wife of Alexander Graham Bell, 1,497; Thomas Sanders, 1,497; Thomas A. Watson, 499; Charles E. Hubbard and Alexander Graham Bell, 10 shares each. This distribution of stock gave the Hubbard family control of Bell's telephone inventions.

capitalization of 2,000 shares of \$100 par value each. Of this capital stock, 1,000 shares went to the Bell Telephone Co., with Gardiner G. Hubbard as trustee, in exchange for the right to operate in New England under the Bell patents. The remaining 1,000 shares were sold for \$50,000 cash, to be used as working capital by the New England Telephone Co.²² The New England Telephone Co. had the following officers: Gardiner G. Hubbard, president; Thomas Sanders, treasurer; Charles Eustace Hubbard, clerk; and George L. Bradley, general agent.

Bell Telephone Co. (corporation) (1878).—On July 30, 1878, four months after the organization of New England Telephone Co., the Bell Telephone Co.²³ was incorporated under the laws of Massachusetts, to exploit the Bell inventions in territories other than those assigned to the New England Telephone Co. The new corporation was capitalized at \$450,000, with 4,500 shares of \$100 par value each. Of this stock, 3,000 shares were issued to the Bell Telephone Co., the association, in exchange for its patent rights. Sanders paid \$25,000 for 1,000 shares, and the remaining 500 shares were sold for \$25,000. Thus, a total of \$50,000 of new capital was realized. The Bell Telephone Co. manufactured the telephone instruments and leased them to licensees in territories outside of New England. The New England Telephone Co. purchased the telephone instruments from the Bell Telephone Co. and similarly leased them to licensees in New England.

National Bell Telephone Co. (1879).—As a result of the financing in 1878, certain new interests came into control of the Bell Telephone Co. and the New England Telephone Co.²⁴ They proceeded to consolidate these organizations with the purpose of unifying control and obtaining additional capital. They incorporated the National Bell Telephone Co. under the laws of Massachusetts on March 13, 1879, "to manufacture, sell, and rent telephones and their appurtenances, and to build, maintain, and operate lines for the transmission of messages by electricity or otherwise."²⁵ The new company was capitalized at \$850,000, with 8,500 shares of \$100 par value each. Of this stock, 2,000 shares went to the New England Telephone Co., and 4,500 shares to Bell Telephone Co., for distribution to their stockholders, share for share, in exchange for the patent rights and property of these two companies. The remaining 2,000 shares of stock were later sold for \$429,831.25 cash.²⁶

American Bell Telephone Co. (1880).—The elimination of the competition by Western Union interests as a result of the contract of November 10, 1879,²⁷ created need for further capital for expansion of telephone service. To meet this need, a new corporation was

²² Exhibit 1360-A, pp. 15-16.

²³ The officers of this company were Gardiner G. Hubbard, president; Thomas Sanders, treasurer; Charles Eustace Hubbard, clerk; and Theodore N. Vall, general manager. Gardiner G. Hubbard, who was Congressman from Massachusetts, had obtained the services of Theodore N. Vall, who had been general superintendent of the Railway Mail Service of the United States Post Office Department. For discussion of the control of Bell Telephone Co., see ch. 4.

²⁴ See *infra*, p. 84.

²⁵ See exhibit 1360-A, p. 21.

²⁶ Of these 2,000 shares, 750 shares went to the money-subscribing stockholders of the Bell Telephone Co. on a 2-votes-to-a-share basis at \$50 per share; 750 shares were sold at an average of about \$123 per share; and 500 shares were sold in December 1879 and January 1880 to stockholders pro rata at \$600 per share. At the organization of the National Bell Telephone Co., William H. Forbes was elected president; Charles E. Hubbard, clerk; George L. Bradley, treasurer; Theodore N. Vall, general manager; and Alexander Graham Bell, electrician. The executive committee consisted of William H. Forbes, Gardiner G. Hubbard, Thomas Sanders, Richard S. Fay, and Francis Blake, Jr. (See exhibit 1360-A, p. 22.)

²⁷ See ch. 5.

created by a special act of the Massachusetts Legislature.²⁸ The American Bell Telephone Co. was formed on April 17, 1880,²⁹ for the purpose of owning, operating, and licensing electric speaking telephones and other apparatus and appliances pertaining to the transmission of intelligence by electricity. It was also given power to own stock without limit in its own licensees wherever they may have been operating, but could not own stock exceeding 30 percent of the total capital stock of other corporations doing business in Massachusetts, except those engaged solely in the manufacture, sale, or manufacture and sale, of electrical apparatus.

The development of the telephone business proceeded energetically under the leadership of the American Bell Telephone Co. Theodore N. Vail, the general manager, had already formulated his conception of an interconnected telephone system by means of long-distance lines. The prospects of this business appeared so promising, and in order that its development might be carried on by a corporation unhampered by the restrictions of Massachusetts statutes, a new corporation, the American Telephone & Telegraph Co., was incorporated in New York in 1885 as a subsidiary of the American Bell Telephone Co. to operate long-distance telephone lines. Vail was its first president. Its original function was to interconnect local exchange areas of the Bell licensees and also to provide private lines for long distance communication. The new company took this business over from the American Bell Telephone Co. The latter confined its activities from then on to the licensing of local companies, the ownership of the telephone instruments, investment in licensees, and assistance and supervision of operating companies, to keep this new and untried means of communication in a commercially acceptable operating condition.

This corporate arrangement lasted until 1900, with the American Telephone & Telegraph Co. developing the new long-distance telephone business and American Bell discharging the functions of a holding company. In 1899 the American Bell Telephone Co., which had been the parent organization up to that time, sold all of its assets to the American Telephone & Telegraph Co., its subsidiary, offering to its stockholders two shares of American Telephone & Telegraph Co. stock in exchange for one share of American Bell stock.³⁰ As a result of this transaction, the American Telephone & Telegraph Co. emerged as the parent company in the Bell System, combining the functions previously exercised by American Bell Co., with the operation of the long-lines business. Since 1900, therefore, the American Co. has been an operating company in the long-distance field, and a holding company insofar as it has been a licensor of, and an investor in, subsidiary telephone and other companies. It also owned the telephone instruments until December 1927, when they were sold to the licensees.

American Telephone & Telegraph Co.—The policy adopted in the licensing of local interests to give telephone service contemplated the organization of local companies to lease telephone instruments and to

²⁸ Acts and Resolves of Massachusetts, 1880, ch. 117. For copy see exhibit 1360-C, appendix 8B.

²⁹ The authorized capital stock of the American Bell Telephone Co. consisted of 100,000 shares of \$100 par value each. Initially, 73,500 shares of these were distributed as follows: 51,000 shares in exchange for 8,500 shares of National Bell Telephone Co. stock, in the ratio of 6 shares for 1; 8,500 shares sold at par to holders of National Bell Telephone Co. stock; and 14,000 shares to W. H. Forbes and R. S. Fay as trustees, to be held for the benefit of American Bell Telephone Co. In December 1880 Forbes, Higginson, Bradley, Hubbard, Watson, and their friends controlled over 50 percent of the shares outstanding. See ch. 4.

³⁰ For fuller discussion of this reorganization, see *infra*, pp. 8-10.

give exchange service, reserving the service of connecting exchanges together to the American Bell Telephone Co. Interexchange service was instituted by Bell companies as early as 1880. A circuit between New York and Boston was completed in 1884, and one between New York and Philadelphia in 1885.³¹ Each of these circuits utilized, in part, pole lines of the licensee companies operating in the territories concerned.

In 1885, officials of the American Bell Telephone Co. decided that it was necessary to organize a special long-lines company to render toll telephone service.³² For this purpose, the American Telephone & Telegraph Co. was incorporated in the State of New York on March 3, 1885. Its initial capitalization was \$100,000, consisting of 1,000 shares of \$100 par value each.³³ All of this stock was purchased by American Bell at par, which made the American Telephone & Telegraph Co. a 100-percent subsidiary of American Bell at its inception.

The charter of the new company stated with great precision that it was organized for the purpose of "constructing, buying, owning, leasing, or otherwise obtaining, lines of electric telegraph partly within and partly beyond the limits of the State of New York, and of equipping, using, operating, or otherwise maintaining, the same." With remarkable foresight, the charter also stated that "the general route of the lines of this association, in addition to those hereinbefore described or designated, will connect one or more points in each and every city, town, or place" in the State of New York with one or more points in each and every other city, town, or place in said State and in the rest of the United States, Canada, and Mexico, "and also by cable and other appropriate means with the rest of the known world as may hereafter become necessary or desirable in conducting the business of this association."³⁴

The extension of the long lines system was gradual but steady. In the first 15 years of its existence, the financial requirements of long lines construction and operations were supplied principally by the American Bell, the controlling company. This was accomplished by the issue of stocks, bonds, and reinvestment of earnings.³⁵

Acquisition of Western Electric Manufacturing Co. (1881).—Theodore N. Vail, the general manager of National Bell and later of American Bell Telephone companies envisaged the development of a national telephone system having three coordinated phases, all controlled centrally, consisting of local exchange service, long-distance service, and a manufacturing affiliate to supply the necessary equipment for both. One of the principal problems faced by the management of the Bell companies prior to 1882 was the provision of a sufficient supply of telephone instruments and maintenance of the equipment already installed in good repair. For this purpose, certain electrical manufacturers were licensed under Bell patents to manufacture telephone apparatus.³⁶ The best-equipped manufacturer of telephone

³¹ See exhibit 134, p. 2.

³² Report of the directors of the American Bell Telephone Co. to the stockholders, for the year ending December 31, 1885, p. 7.

³³ See exhibit 1360-A, p. 34.

³⁴ For copy of American Co.'s certificate of incorporation, see exhibit 1360-C, appendix 10.

³⁵ See exhibit 1360-A, pp. 35-36. On the development of long lines services, see *infra*, ch. 12. On financing, see *infra* ch. 15, sec. 2.

³⁶ See exhibit 1362-E, p. 1329. The manufacturing licensees prior to 1882 were the following: Gilliland Electric Manufacturing Co., successor to Indianapolis Telephone Co.; Charles Williams, Jr., Boston, Mass.; Post & Co., Cincinnati, Ohio; Davis & Watts, Baltimore, Md.; Electric Merchandising Co., Chicago, Ill.; and the Telephone & Telegraph Construction Co.

instruments, however, was the Western Electric Manufacturing Co., which was then manufacturing all of the electrical apparatus required by Western Union Telegraph Co. Western Electric Manufacturing Co. was the largest producer of telegraph and telephone apparatus in the country.³⁷

In July 1881 American Bell Telephone Co. acquired 1,200 shares of stock of Western Electric Manufacturing Co., out of a total of 3,000 shares outstanding.³⁸ Thereupon, the American Bell Telephone Co. devised a plan whereby the Western Electric Manufacturing Co. could be consolidated with some of the manufacturing licensees of the Bell companies.

The Western Electric Co. was incorporated under the laws of the State of Illinois in November 1881³⁹ with a capitalization of 10,000 shares of stock of \$100 par value.⁴⁰ In return for its 40-percent interest in Western Electric Manufacturing Co., and the extension of perpetual manufacturing rights under Bell patents, the American Bell Telephone Co. had acquired, by February 28, 1883, 4,580 shares of Western Electric Co. stock out of total outstanding shares of 8,800, or 52.05 percent. Upon the merger of the Charles Williams shop in Boston with Western Electric, American Bell, which had a financial interest in the shop, retained 700 shares out of 1,200 shares of Western stock issued for the Charles Williams property, thus raising its interest in Western Electric to 5,280 shares out of 10,000 shares outstanding or 52.8 percent, on February 28, 1884.⁴¹

American Bell, and later American Telephone & Telegraph Co., continued to increase their common-stock interest in Western Electric Co. At December 30, 1899, after the American Bell had transferred its assets to the American Co., it had in its portfolio 36,054 shares of Western Electric Co. stock, constituting 60.09 percent of 60,000 shares outstanding. This percentage remained practically unchanged until 1908, when, under the impetus of the management of Theodore N. Vail,⁴² the American Co.'s interest in Western Electric was increased to 80 percent. By November 1915, when Western Electric Co. of New York was organized to take over the business of the Illinois corporation, the American Co. owned 97.37 percent of Western Electric (Illinois) stock. By the end of 1935 this interest had increased to 99.42 percent of the 6,000,000 of no par common stock outstanding.⁴³

Corporate Reorganization (1899-1900)

From 1875 to 1900, the predecessors of American Telephone & Telegraph Co. in control of the Bell System were all organized under the laws of Massachusetts. Three features of the Massachusetts corporation laws, however, were particularly objectionable to the Bell interests:⁴⁴

First, American Bell was prevented by the statutes of Massachusetts from acquiring more than 30 percent⁴⁵ of the capital stock of any corporation doing business in the Commonwealth except corporations operating under licenses from it and corporations doing business in the Commonwealth engaging solely in the manufacture, sale, or manufacture and sale of electrical apparatus.⁴⁶

³⁷ For a corporate history of Western Electric Co., Inc., and its predecessors, see *infra*, pp. 26-35.

³⁸ See exhibit 1362-E, p. 1330.

³⁹ See exhibit 1952, p. 14.

⁴⁰ See exhibit 1362-E, 1331.

⁴¹ *Ibid.*, p. 1331; table 1, p. 1336; and schedule 8.

⁴² Vail resigned the presidency of American Telephone & Telegraph Co. in 1887, and engaged in business for himself at home and abroad. In 1902 he was selected director of the American Co., and in 1907 he was made president again. For details, see ch. 4.

⁴³ See exhibit 1362-E, table 2, p. 1337.

⁴⁴ See exhibit 1360-A, pp. 41-42.

⁴⁵ Circular letter to stockholders dated March 15, 1900.

⁴⁶ Acts and Resolves of Massachusetts, 1883, ch. 200. For copy see exhibit 1360-C, appendix 8-C.

Second, American Bell was not permitted to pay dividends in its own stock ⁴⁷ or sell its stock at less than the market price, to be determined by the Massachusetts commissioner of corporations.⁴⁸

Third, it was difficult to secure permission to increase capitalization under the Massachusetts corporation laws.

The Bell officials finally decided to shift the control of their system from the American Bell Telephone Co., incorporated in Massachusetts, to the American Telephone & Telegraph Co., incorporated in New York. Accordingly, during 1899, American Bell transferred its entire holdings of stock and bonds to the American Co., with the exception of the capital stock of the latter. Immediately prior to the transfer of these investment securities, they were carried in the accounts of American Bell at \$39,167,125. They were transferred to its wholly owned subsidiary, the American Co., at \$51,360,558, and the intercompany book profit of \$12,193,433 was recorded as a credit to profit and loss by American Bell.

At the end of 1899, the authorized capital stock of the American Co. was \$75,000,000 par value, of which \$70,975,500 had been issued and was held by American Bell. Although American Bell had transferred all of its investment securities to the American Co., except the capital stock of the latter, it still remained the controlling company of the Bell System through its 100-percent ownership of all outstanding common stock of the American Co. The two companies were soon consolidated. This consolidation was effected during 1900, as of December 30, 1899, by (a) an offer by American Bell to its stockholders of two shares of the stock of American Co. in exchange for each of its own shares, and (b) transfer by American Bell of all of its remaining assets, subject to existing liabilities, to the American Co.

In connection with the foregoing transactions, the American Co., having increased its authorized capital stock to \$100,000,000, delivered an additional \$12,907,500 par value of stock to American Bell in settlement of intercompany accounts, which increased the latter's holdings to \$83,883,000 par value. All of this stock was not required by American Bell for the purpose of retiring its outstanding capital stock on a two-shares-for-one basis. The balance of \$32,100,400 not required for this purpose became treasury stock of the American Co. The transaction may be summarized as follows: ⁴⁹

Particulars:

	Par value
Capital stock of American Co. held by American Bell on Dec. 30, 1899.....	\$70, 975, 500
Additional par value received in 1900.....	12, 907, 500
Total.....	83, 883, 000
Deduct par value required to retire \$25,886,300 par value of outstanding capital stock of American Bell.....	51, 772, 600
Balance which became treasury stock of American Co. after completion of consolidation.....	32, 110, 400

⁴⁷ Acts and Resolves of Massachusetts, 1894, ch. 350.

⁴⁸ *Ibid.*, ch. 544. In 1894, American Bell applied for an increase in capitalization to \$50,000,000. Although the Massachusetts Legislature authorized the desired increase for the issue at par, the Governor vetoed the bill on the grounds that the company was a public-service corporation and subject to the Massachusetts law compelling such corporations to issue stock at the market price. The Bell officials, feeling the urgent need of funds, reluctantly agreed to the introduction of a new bill calling for the same capitalization, namely, \$50,000,000, but classifying American Bell as a public-service corporation and providing that the Massachusetts commissioner of corporations was to fix the price at which the new stock would be offered to stockholders. Between November 1894 and April 1897, 58,863 shares were sold for a net amount realized of \$11,906,882, or an average price of \$203.81 per share. (Exhibit 1360-A, pp. 37-40.) Although this method of financing was favorable to the company, the officials of American Bell Telephone Co., representing the early investors in Bell enterprises, did not like to give up the indirect distribution of profits by issuing stock at less than market price.

⁴⁹ See exhibit 1360-A, pp. 42-43.

As a result of this reorganization, the American Telephone & Telegraph Co. emerged as the topmost holding company in the Bell System. It assumed the threefold functions of (a) long lines operating company, (b) holding company of operating companies' securities, and (c) licensor of operating companies under patents transferred to it by the American Bell Telephone Co.⁵⁰

258,863 shares of \$100 par-value capital stock of the American Bell Telephone Co. were replaced by twice that number, or 517,726 shares of \$100 par-value stock of the American Co. The same transaction resulted in only 321,104 shares of American Co. stock remaining in the hands of the American Bell Telephone Co. These shares, however, were considered treasury stock of the American Co. held by American Bell for the benefit of the former.⁵¹ This treasury stock was available for sale and was disposed of in 1902 and 1908 partly for cash and the remainder in exchange for securities of associated operating companies through a subsidiary security company.

Recent corporate history (1900-1937).

The corporate history of the American Telephone & Telegraph Co. from 1900 to date is characterized principally by an expanding capitalization. At December 31, 1900, a year after the reorganization of the holding company, the American Co. had outstanding stock and bonds of \$76,990,100, composed of 569,901 shares of \$100 par-value stock and \$20,000,000 of bonds. At the end of 1935, the total had expanded to \$2,309,760,100, composed of 18,662,275 shares of \$100 par-value stock and \$443,532,600 face amount of bonds.⁵² Total assets and liabilities between these two dates expanded from \$100,000,000 to \$2,995,000,000.

During this period, the American Co.'s expanding activities were manifesting themselves in the organization and acquisition of interest in a large number of direct and indirect subsidiaries. The Bell System adopted four major policies to guide its action in accomplishing its objectives, namely, increase of interest in subsidiary telephone companies, acquisition of independent telephone companies, extension of telephone service, both local and long distance, and exploitation of nontelephonic activities. The methods by which the funds were acquired for the purpose of carrying out these policies are discussed elsewhere in the report.⁵³

Extension of control over licensees.—After American Bell was consolidated with American Telephone & Telegraph Co., as of December 30, 1899, the latter company came into ownership of a majority of the outstanding voting stock of most of the telephone licensees, as well as of Western Electric Co. The American Co. continued the policy of increasing this percentage of ownership, particularly after Theodore N. Vail became president of the company for the second time in 1907. This was done principally by the acquisition of the holdings of minority stockholders and discouraging them from subscribing to their pro rata share of new offerings of stock. In some instances, minority stockholders were eliminated through consolidations. The assets of a company in which the American Co. had control would be sold to other Bell companies for a cash consideration,

⁵⁰ The American Bell Telephone Co. remained in existence until 1921, but was inactive even though it retained nominal control of some patents and contracts, the beneficial interest in which rested in the American Co.

⁵¹ See exhibit 1360-A, pp. 43 and 307.

⁵² *Ibid.*, table 56, p. 290.

⁵³ See *infra*, ch. 15.

and the cash would be distributed pro rata as a liquidating dividend, thus paying off minority holders. The American Co. usually reinvested its proportion of such distributions in additional stock of the companies which acquired the net assets of the liquidated companies.⁵⁴ Other means of eliminating minority stockholders were as follows:

1. Cash purchases, principally through agents or affiliated securities companies, which usually did not disclose the fact that the acquisitions were being made for the account of the American Co.

2. Exchange for stock of the American Co. on various bases of exchange, usually through affiliated securities companies.

3. Exchange for bonds of the American Co.⁵⁵

In many instances, the American Co. paid liberal prices for the shares purchased from minority stockholders. In other cases, various means were employed to induce such stockholders to dispose of their holdings at prices which the American Co.'s officials were willing to pay. Some of these methods were as follows:⁵⁶

1. Forcing certain licensees to suspend dividend payments.

2. Directing such licensees to appropriate all remaining earnings, after interest deductions, for depreciation and maintenance reserves.

3. Use of propaganda to discourage minority stockholders and depress the market prices of their stock.

4. Establishing market prices below those offered for stock by agents for the American Co. by use of "wash sales."

5. Giving minority stockholders discouraging advice and recommending that they accept the prices offered by the American Co.

The above-mentioned practices also discouraged many minority stockholders from taking their pro rata share of new stock offered by certain Associated Telephone Cos. In addition, shortly after 1900, the American Co. began the practice of supplying many of the licensees with most of the funds required for expansion purposes, on short-term or demand notes, usually bearing interest at 6 percent per annum. In some cases, such advances continued to grow over a period of years until they were three or four times as great as the par value of the outstanding stock. During this period, the American Co. received interest on these advances and payments under its license contracts which gave it a substantial return on its total investment, even though dividend payments had been suspended so that the minority stockholders received nothing. When the American Co. offered to convert a substantial part of such advances into stock by taking all of a new issue, the minority stockholders were not in a very favorable position to object, and, having received no dividends for a number of years, they very probably were not disposed to subscribe to any new stock at par if offered pro rata to all stockholders. Thus, by the conversion of such advances into stock in this manner, the American Co. was enabled to increase its ownership from a bare majority to 80 or 90 percent.⁵⁷ In general, it appears that the officials of the associated telephone companies, particularly with respect to the less prosperous companies, conducted the operations and activities of those companies in the interest of the principal stockholder, the American Co.⁵⁸

⁵⁴ See exhibit 1362-B, pp. 424-434, for examples of elimination of minority stockholders of merged or consolidated companies.

⁵⁵ See exhibit 1362-A, p. 89, and exhibit 1362-E, pp. 1346-1347.

⁵⁶ See exhibit 1362-A, pp. 143-165, and exhibit 1362-E, p. 1275.

⁵⁷ See exhibit 1362-D, pp. 1095 and 1103.

⁵⁸ See exhibit 1360-A, pp. 238-242.

The extent to which the American Co. increased its percentage of ownership in the Associated Telephone Cos. in which it held a stock interest, during the period from 1900 to 1935, inclusive, is shown in the following tabulation:⁵⁹

Percentage of voting control held by American Co.	Number of companies —		
	As of Dec. 31, 1899	As of Dec. 31, 1912	As of Dec. 31, 1935
1 to 24.....	5	—	—
25 to 49.....	12	2	2
50 to 74.....	22	3	2
75 to 98.....	1	1	1
99 to 100.....	—	12	16
Total.....	40	18	21

Variations in the number of companies during the period were due to changes in investments resulting from reorganizations, consolidations and mergers, and transfers of investments in certain associated companies between the American Co. and other associated companies.

The Diamond State Co.—⁶⁰ From time to time, subsidiary companies were organized to assist in the sale of securities and in the acquisition of independent telephone companies. One of those was the Diamond State Co., organized December 21, 1906, under the laws of Delaware, with a capitalization of 50,000 shares of \$100 par value, distributed among the stockholders of New York Telephone Co. as follows:⁶¹

Stockholder	Shares of Diamond State Co. stock sub- scribed	Percent sub- scribed
American Telephone & Telegraph Co.....	32,216	64.43
Western Union Telegraph Co.....	10,222	32.45
J. P. Morgan & Co.....	1,406	2.81
George S. Bowdoin.....	156	.31
Total.....	50,000	100.00

Those subscriptions were taken at different times during the life of the company from 1906 to 1910. In May 1909 New York Telephone Co. acquired the American Co.'s interest in Diamond State for \$1,289,540. New York Telephone Co. acquired also the interest of the other stockholders for \$711,360.

The Diamond State Co. participated in some important transactions. It was employed as an intermediary in the acquisition of some 266,068 shares of Western Union Telegraph Co. between April and June 1909.⁶² These shares were later transferred to Atlantic & Pacific Telephone & Telegraph Co., a subsidiary of the American Co., and were ultimately taken up by the latter. In 1909, the Diamond State Co. was intermediary in some important transactions involving Central New York Telephone & Telegraph Co., Bell Telephone Co. of Buffalo, Empire State Telephone & Telegraph Co. and others,⁶³ pre-

⁵⁹ Ibid., p. 223.

⁶⁰ The American Co. has informed the Federal Communications Commission accountants that the books of Diamond State Co. cannot be located.

⁶¹ See exhibit 1362-E, p. 1286.

⁶² Ibid., pp. 1291-1292.

⁶³ See exhibit 1362-B, p. 384.

liminary to the consolidation of New York State area into an operating unit. Diamond State Co. financed its activities principally with funds borrowed from American Telephone & Telegraph Co., New York Telephone Co., and New York & New Jersey Telephone Co. In these transactions the Diamond State Co. acted principally as the agent of the American Telephone & Telegraph Co.

The Atlantic & Pacific Telephone & Telegraph Co.—An agency similar to Diamond State Co. was the Atlantic & Pacific Telephone & Telegraph Co., which was incorporated in July 1903, under the laws of the State of New Jersey, with an initial authorized capitalization of \$25,000, consisting of 250 shares of common stock having a par value of \$100 per share. Until 1905, the initial issue of \$1,000 par value capital stock was held by the incorporators. From October 13, 1905, until the eventual dissolution in July 1922, the entire outstanding capital stock of the company was owned by the American Telephone & Telegraph Co. The American Co. contributed to the Atlantic Co. its initial assets, nominated and elected its officers, and controlled its operations.⁶⁴ The Atlantic Co. was practically inactive from the date of its incorporation in 1903 to November 1909.

Shortly after Mr. Vail became president of the American Co. in 1907, plans were made for the consolidation of certain licensee companies and for rearrangements of operating territories. In connection with such consolidations, the American Co. began an intensive campaign to acquire stock of the associated telephone companies held by minority stockholders, and to absorb numerous independent and opposition company properties. In carrying out these transactions, the American Co. used its wholly owned subsidiary, the Atlantic & Pacific Telephone & Telegraph Co., as an agent. The transactions were conducted by the Atlantic Co. at the direction of the American Co. and for the benefit of the latter and its associated telephone companies. In addition to the participation of the Atlantic Co. in the new program of acquisitions and consolidations, the American Co. used this subsidiary also to distribute its own common stock.

In general, the activities of the Atlantic Co. in connection with these transactions consisted of the following:⁶⁵

1. Exchange of American Telephone & Telegraph Co. common stock for capital stock of associated companies held by minority stockholders.

2. Exchange of American Co. stock for controlling interest in independent or opposition companies, or the furnishing of such stock to associated telephone companies or to their subsidiaries for the same purpose.

3. Furnishing to trustees under the employees' stock plans sufficient shares to cover the sales of American Co. stock to Bell System employees under the plans.

4. The resale of American Co. stock for the purpose of effecting a wider distribution in addition to the distribution effected by the foregoing activities.

5. Purchase of securities of associated, independent, and opposition telephone companies, and their transfer principally to the American Co. and its associated telephone companies.

⁶⁴ See exhibit 2003, p. 2.

⁶⁵ Ibid., p. vi.

During the years of active operation, the Atlantic Co. engaged in very sizable transactions. Between January 1, 1910, and December 31, 1919, it acquired and disposed of 470,016 shares of American Telephone & Telegraph Co. stock. The total cost of acquisition was stated at \$65,505,177, and the value of the proceeds, whether cash or other securities, obtained in exchange for those shares was stated at \$61,903,854.⁶⁶ A summary of investment securities acquired and disposed of by the Atlantic Co. other than capital stock of the American Co. and capital stock of associated companies acquired in exchange therefor, also indicates the extent to which the Atlantic Co. was used as an instrumentality for trading in securities. From November 15, 1909, to July 17, 1922, the Atlantic Co. acquired common and preferred stocks, bonds, coupon notes, bills receivable, and other miscellaneous securities, at a total cost of \$130,381,543, and sold them for a total price of \$129,077,297, leaving a net loss on all these transactions of \$1,304,246.⁶⁷

Bell Telephone Securities Co.—Another instrumentality employed by the American Co. to promote the distribution of its stock was the Bell Telephone Securities Co., incorporated on September 13, 1921, under the corporation laws of the State of Delaware, with an authorized capital of \$1,000,000, consisting of 10,000 shares of common stock with a par value of \$100 per share. The entire issue of the stock was taken by the American Co. for cash at par. The certificate of incorporation gave the Securities Co. the right to deal in the securities of communications companies and "to render services in the financing of the corporations constituting the Bell System and in the sale and distribution of their stocks, bonds, notes, and other evidences of indebtedness."⁶⁸

The Securities Co. kept to its original purpose of carrying on a general campaign to promote local ownership, particularly by small investors, of the various securities of the Bell Telephone System. In addition to distribution of American Co. stock among small holders, the Securities Co. also had as one of its objectives the redistribution of stockholdings from the financial centers of northeastern United States to other communities in the West and the South. This work was undertaken to a large extent through the employees of the associated companies acting on behalf of the Bell Telephone Securities Co.⁶⁹ Public-relations aspects of the work of the Securities Co. were not ignored, as they led to a greater interest in the affairs of the Bell System among employees engaged in the work of selling securities, and also created a broader basis of public interest in the welfare of the system.

During the period from November 1921 to June 2, 1933, the Securities Co. distributed or redistributed a total of nearly 2,400,000 shares of American Telephone & Telegraph Co. stock through direct sales campaigns.⁷⁰ The Securities Co. obtained the shares of American Co. from the stock market, brokers, individuals, and the American Co. itself. In the years 1923, 1924, 1925, and 1926, the purchases of the Securities Co. from brokers varied between 21 and 38.8 percent

⁶⁶ See exhibit 2093, table 1, p. 17. The considerations received in exchange for the American Co. shares are listed in exhibit 2093, table 3, p. 24, and table 4, p. 33.

⁶⁷ *Ibid.*, table 5, p. 44. The details of these transactions are given in exhibit 2093, table 6, p. 45; table 7, p. 53; table 8, p. 64; and table 9, p. 65.

⁶⁸ See exhibit 250, p. 9.

⁶⁹ See *ibid.*, p. 53.

⁷⁰ See exhibit 230, table 2, p. 11.

of the total number of American Co. shares sold in the New York and Boston stock exchanges. The Securities Co. became inactive in 1933 and was dissolved in 1936.⁷¹

Bell Telephone Co. of Canada.—The American Telephone & Telegraph Co. has a large financial interest in the Bell Telephone Co. of Canada. Its investment at December 31, 1935, amounted to \$19,089,783, consisting of 187,498 shares of common stock, or 24.06 percent of the 779,380 shares outstanding,⁷² and advances of \$235,000.

The American Co.'s interest in the Bell of Canada dates back through its predecessors to 1880. In that year Canadian Telephone Co., Ltd., was organized for the exploitation of Canadian patent rights owned by Alexander Melville Bell, father of Alexander Graham Bell, and Charles Williams, Jr., of Boston. It was to function as a licensor company. At the same time the Bell Telephone Co. of Canada was organized and became a telephone operating company as a licensee of the Canadian Co. American Bell Telephone Co., through arrangements with Bell and Williams, acquired stock interests in both companies at their inception. In 1882, the Canadian Co. was consolidated with the Bell of Canada through the issue by the latter company of two shares of its common stock for each outstanding share of the Canadian Co. In the early years of the history of Bell of Canada, American Bell had substantial interest in its common stock, amounting to 47.75 percent in 1891.⁷³ Although the financial interest of the Bell parent organization in the United States in the Bell of Canada has increased steadily to the present time, the proportion of stock owned by it has gone down steadily, until now it stands at a little over 24 percent of the total outstanding shares.

In addition to stock ownership, the Bell Telephone Co. of Canada has had a license contract with the American Co. since May 1923, under the terms of which it pays a license contract fee on a basis somewhat lower than that of the associated companies. At present the Bell of Canada pays 1 percent of specified revenues, as compared with 1½ percent paid by the associated companies.

Cuban American Telephone & Telegraph Co.—This company was incorporated in Cuba on October 27, 1919. It holds a concession from the Government of Cuba to establish submarine cable connections between Cuba and the United States. It owns and operates four submarine cables, each about 110 miles in length, from Habana, Cuba, to Key West, Fla., thus establishing telephonic communication between Cuba and the United States, Canada, Mexico, Great Britain, and Europe. The terminal equipment at Key West, Fla., is owned by American Telephone & Telegraph Co., and the telephone equipment at Habana, Cuba, is owned by Cuban Telephone Co.⁷⁴ The latter company is controlled by International Telephone & Telegraph Corporation.

The Cuban American Co. had outstanding, at December 31, 1934, 8,650 shares of common stock and 6,800 shares of preferred stock of \$100 par value each. Both classes of stock had voting power and were owned equally by American Telephone & Telegraph Co. and International Telephone & Telegraph Corporation. Of the 10 directors of

⁷¹ See exhibit 250, pp. 80-81.

⁷² See exhibit 1362-E, table 2, p. 1316 and table 3, p. 1317.

⁷³ *Ibid.*

⁷⁴ Contract of April 1, 1921, between American Telephone & Telegraph Co., Cuban Telephone Co., and Cuban American Telephone & Telegraph Co., third section, par. 1.

the Cuban American Co. as of November 1, 1935, four were vice presidents of American Telephone & Telegraph Co. Of the executive committee of five, two represented the American Co. and three represented the International. The president of the Cuban American Co., Sosthenes Behn, is the president of the International. The first vice president, T. G. Miller, is also vice president of the American Co. in charge of the long lines department.

According to an agreement of April 1, 1921, entered into by American Telephone & Telegraph Co., Cuban Telephone Co., and Cuban American Telephone & Telegraph Co., the type of equipment to be used by the cable company, and the operating practices, are to be those established by the American Co.⁷⁵ Furthermore, the facilities provided by Cuban American Telephone & Telegraph Co. are retained for the exclusive use of the Bell System and Cuban Telephone Co. The cable facilities of the Cuban American Co. were established primarily for the purpose of toll telephonic communication. Contracts with patrons for special contract services are made subject to terms to be specified from time to time by the American Co. and approved by Cuban Telephone Co. and Cuban American Telephone & Telegraph Co.

It appears, therefore, that although the majority of the directors and the chief officers of Cuban American Telephone & Telegraph Co. represent International Telephone & Telegraph Corporation interests, as an operating cable company the Cuban-American Co. is subject to the rules and specifications of the American Co.

The Cuban American Co. had, at December 31, 1934, total assets of \$1,451,262 (exclusive of discount on capital stock, of \$540,000), of which plant and equipment represented \$1,394,836. In 1934, it had total operating revenues of \$169,715.⁷⁶

Bell Telephone Laboratories, Inc.—The American Telephone & Telegraph Co. has a 50-percent interest in Bell Telephone Laboratories, Inc. Western Electric controls the other 50 percent of the stock. The Laboratories was incorporated on December 27, 1924, to take over the engineering and part of the patent departments of Western Electric Co. The American Co. also transferred to it the activities of its own department of development and research in 1934. The Laboratories has its headquarters at 463 West Street, New York City. The expenses of the Laboratories are recovered by billings against the American Co., Western Electric Co., and Electrical Research Products, Inc., a subsidiary of Western.⁷⁷ The relations recited above and the constitution of the board of directors of the Bell Telephone Laboratories indicate that it functions as the equivalent of a department of the American Telephone & Telegraph Co. and Western Electric. At November 1, 1935, the officers and directors of Bell Laboratories were officers either of the American Co. or of Western Electric Co.⁷⁸

195 Broadway Corporation.—The 195 Broadway Corporation was organized in June 1915, to own the headquarters building then erected for the use of the American Telephone & Telegraph Co. and the Western Union Telegraph Co. Later, an addition to the headquarters building was constructed, which was incorporated as 205 Broadway Corporation in March 1920. The American Co. owned all the outstanding capital stock of the 205 Broadway Corporation from the

⁷⁵ *Ibid.*, second section, par. 4, and third section, par. 3.

⁷⁶ See exhibit 50, p. 64.

⁷⁷ See sec. 3 of this chapter.

date of its organization. It held 70 percent of the stock of the 195 Broadway Corporation until 1930, when the other 30 percent was acquired from the Western Union Telegraph Co., which had shared the headquarters building of the American Co. prior to that time. In December 1930 a new company, also named 195 Broadway Corporation, was organized to take over the two predecessor companies. The investment of the American Co. in 195 Broadway Corporation, at the end of 1935, amounted to \$21,290,000, consisting of capital stock, real-estate mortgages, and advances.⁷⁹

Other interests.—From time to time, the American Co. has organized companies or has acquired an interest in companies which have been active in fields other than telephone communication. In 1909 it acquired 30-percent interest in Western Union Telegraph Co., which was sold in 1914 at the suggestion of the Department of Justice to avoid conflict with the antitrust laws. This sale was made at a considerable loss to the American Co. In August 1920 the American Co. acquired 500,000 shares of 7-percent cumulative preferred stock and 500,000 shares of no-par common stock of Radio Corporation of America and recorded in its books an investment of \$2,435,141, representing these stocks. The common stock was sold between February 15 and April 21, 1922, and the preferred stock between June 24, 1922, and January 22, 1923, for a total consideration of \$3,059,290, indicating a book profit of \$624,149; however, the cross-licensing agreement which was executed at the same time that the stocks were acquired was a substantial consideration in this transaction not recorded in the books of account.⁸⁰ The sale of this stock did not affect the status of the cross-licensing agreement.

In May 1926 the American Co. caused the organization of Broadcasting Co. of America, with an authorized capital stock of \$200,000, divided into 2,000 shares of \$100 par value each. This company was organized to facilitate the disposition of the American Co.'s radio station WEAf, the sale of which was at the time the subject of negotiation with Radio Corporation of America. The American Co. transferred the station WEAf properties to Broadcasting Co. of America. The assets of Broadcasting Co. of America were made subject to sale to Radio Corporation of America by the provisions of the purchase agreement of July 1, 1926, between American Telephone & Telegraph Co., Broadcasting Co. of America, and Radio Corporation of America. The actual transfer of the assets of Broadcasting Co. of America to National Broadcasting Co., Inc., a subsidiary of Radio Corporation of America, took place as of November 1, 1926.⁸¹

The Transpacific Communication Co., Ltd., was organized in August 1930 under the laws of the State of California as a wholly owned subsidiary of American Telephone & Telegraph Co., for the purpose of operation the radiotelephone link between the continental United States and the Hawaiian Islands, a new link provided for in an agreement between the American Co. and the Mutual Telephone Co. of Hawaii, dated July 1, 1930, and other similar services. Transpacific Communication Co., Ltd., was for all practical purposes equivalent to a department of the American Co., similar to the long lines Department, devised to extend long-distance telephony to foreign shores. By resolution of the board of directors of the American

⁷⁹ See exhibit 1362-E, pp. 1392-1394.

⁸⁰ *Ibid.*, pp. 1394-1395 and 1400.

⁸¹ *Ibid.*, pp. 1387-1388; also exhibit 289, pp. 38-42.

Telephone & Telegraph Co. on June 16, 1936, Transpacific Communication was dissolved and its licenses for radio channels were transferred to the American Co., the transaction being approved by the Federal Communications Commission on September 9, 1936.

SECTION 2. DEVELOPMENT OF ASSOCIATED BELL TELEPHONE COMPANIES

In the preceding section, the corporate history of the parent company of the Bell System has been traced from 1875 to the present, with mention of the various instrumentalities and activities whereby the Bell System has attempted to achieve its aims. Mention was also made of the acquisition and consolidation of licensees and of Western Electric Co. Since the associated companies and Western Electric are the instrumentalities through which the two major activities of the Bell System are conducted, they are separately treated in sections 2 and 3, respectively.

Organization and Licensing of Local Operating Companies.

The principal function of the various successive Bell companies was, of course, the commercial exploitation of the Bell patents. To accomplish this, the Bell interests adopted the policy of licensing local companies and individuals and leasing telephone instruments to them. This method evidently was pursued in order to retain control of the new industry and to maintain satisfactory service by proper repairs and replacements of defective instruments.⁸²

At first, the private line business was regarded as the most promising field of development.⁸³ It was clear by the end of 1878, however, that exchange service would become an important field of exploitation of the telephone. Consequently, short-term license contracts for such business were executed with local interests. These licenses required the Bell Co. to furnish to the licensee, exclusively for the term of the contract, telephones manufactured under the Bell patents. The licensee, on the other hand, was to construct and equip the lines. For the use of the telephones, the licensee was to collect from his subscribers such rentals as were fixed by the Bell Co. from time to time, and to remit such rentals to the Bell Co. after deduction of a stipulated discount which constituted the compensation of the licensee.⁸⁴ By November 1879 the parent organizations of the Bell System had executed 185 contracts for local telephone business, thereby preempting the larger part of the productive territory including the principal cities of the United States as of that time, with one or two exceptions.⁸⁵

These licenses were valid only for short periods, usually for 5 years. They provided that at the expiration of the contract, or in case of a specified breach of the contract, the telephone property used by the licensee in the telephone business was subject to purchase by the licensor at its own option, at a reasonable price, but not in excess of actual cost. This arrangement was made to obtain local capital in the promotion of the business, and at the same time to retain control of the industry at the expiration of the licenses as stated by Theodore N.

⁸² See exhibit 130, p. 1.

⁸³ *Ibid.*, p. 2; also exhibit 1951-A, pp. 5-6.

⁸⁴ See exhibit 130, p. 3. The exchange licenses were limited as to territory and restricted to exchange business, the licensor reserving to itself the rights as to connections between exchanges both within and without the licensee's territory.

⁸⁵ *Ibid.*, p. 4.

Vail, general manager of National Bell and American Bell Telephone Cos. in the early days.⁸⁶

Because of the uncertainty of tenure, the licensees were in general unwilling to furnish sufficient capital for the development and operation of their business and were unable to secure it from other sources. The licensor adopted the practice of issuing new permanent licenses for the purpose of eliminating the objections of the licensees to the temporary licenses and also for the purpose of obtaining for the licensor a permanent interest in the operating companies. The control of the Bell patents and the option provision contained in most of the temporary licenses placed the licensor in an extremely advantageous bargaining position.⁸⁷ Among the terms of the permanent licenses were usually certain provisions inserted by the licensor to secure and maintain an interest in and a control of the licensee's business. The annual report to stockholders of American Bell Telephone Co. for 1882 states: "We have, during the past year, pursued the policy of giving permanent contracts to our licensees, taking a stock interest in payment. The company can in this way obtain a permanent vested interest in the telephone business independent of its royalties upon telephones." The permanent license contracts provided:⁸⁸

1. The licensor was to receive from 30 to 50 percent (usually 35 percent) of the capital stock of the licensees, with the right to receive the same percentage of any additional issue of capital stock without cost. (The right to receive additional license stock was generally not exercised by the licensor.)

2. The licensees were generally prohibited from borrowing money without the consent of the licensor.

3. The costs of extension and development of the licensees' business were to be met by the issue of capital stock and not by the use of the profits from the business.

4. The licensor was expressly granted representation on the licensees' board of directors and usually also on its executive committee.

5. The licensees were required to—

make such reports, give such information regarding the operations of their exchanges and the prices charged as the licensor may from time to time request.

Acquisition of Control of Local Operating Companies.

The receipt of franchise stock in exchange for permanent licenses was the first important step in the eventual acquisition of stock control of most of the licensees. In practically all these licensees the American Bell, and later the American Telephone & Telegraph Co., continued to increase its stock ownership. This generally was accomplished in one or more of the following ways:

1. Acquisition of stock licensees, in addition to taking American Bell's pro rata share of new stock issues, so that when the original Bell patents expired, in 1893 and 1894, it held controlling capital stock interests in most of the principal licensees.

2. Promotion of consolidations and mergers of licensees and sub-licensees operating in adjoining territories, which usually gave American Bell a controlling interest in the new company, whereas, previous

⁸⁶ Ibid., pp. 5-6.

⁸⁷ Ibid., p. 15. These restrictions were ordinarily included in the "Preliminary Agreement," Ibid., pp. 27-27.

⁸⁸ See exhibit 1362-A, pp. 6-7.

to such consolidations and mergers, it did not own or control a majority of the stock of all of the former companies which were combined.

3. Special efforts exerted by the American Co., after 1900, to increase its stock ownership in the licensees by acquisition of the holdings of minority stockholders, as a result of which it acquired all or substantially all of the outstanding voting stock of most of such licensees, including its manufacturing subsidiary, Western Electric Co.

The policy of the American Bell to increase its stock interest in the principal licensees is exemplified in table 2, which indicates the percent of common stock owned by the American Bell in 1885 and 1899 in certain principal licensee companies.⁸⁹

As of December 31, 1901, the investments of the American Co. included the following par value of voting stock of licensees, which had been received by it or its predecessors under the license contracts (usually referred to as franchise stock) or in exchange for such franchise stock:⁹⁰

Particulars:	Par value
Associated telephone companies.....	\$15, 472, 814
Western Electric Co.....	200, 000
Total.....	15, 672, 814

In this way, the Bell Co. profited not only from the rentals charged on the telephone instruments leased to the licensees but also from a proportionate share of their net profits. Furthermore, the large amounts of franchise stock, together with subsequent acquisitions had, at the time the basic patents expired in 1893-94, given the Bell interests a stock control of most of the licensees.

TABLE 2.—Increases in percentages of stock ownership in certain licensee companies by American Bell, as of Dec. 31, 1885 and 1899

Item	Name of company (a)	Percentage of common stock owned by American Bell		
		1885 (b)	1899 (c)	In-crease (d)
		Per-cent	Per-cent	Per-cent
1	Central New York Telephone & Telegraph Co.....	35. 00	50. 02	15. 02
2	New York and Pennsylvania Telephone & Telegraph Co.....	36. 50	49. 29	12. 79
3	The Bell Telephone Co. of Philadelphia.....	28. 57	80. 98	52. 41
4	The Pennsylvania Telephone Co.....	36. 97	50. 09	13. 12
5	Central Pennsylvania Telephone & Telegraph Co.....	35. 47	50. 69	15. 22
6	The Central District and Printing Telegraph Co.....	50. 20	66. 89	16. 69
7	The Bell Telephone Co. of Missouri.....	54. 08	66. 46	12. 38

Source: Exhibit 1360-A, table 52, p. 218.

Coincident with the integration of local properties into larger operating units, as described below, the parent organization of the Bell System increased its financial interest in these licensees, until today the American Co. controls over 90 percent of the combined capital stock of the associated companies. Table 3 gives the growth in the

⁸⁹ The common stock owned by American Bell Telephone Co. in associated companies is given annually from 1881 to 1899 in schedule 4 of exhibit 1360-B; and the investments of the American Co. in associated companies from 1900 to 1935, inclusive, are given in schedule 7, of the same exhibit.

⁹⁰ See exhibit 1362-A, p. 8.

American Co.'s investment in the stock of associated companies by 5-year intervals since 1900.

In only two of the direct licensees of the American Co. is the stock ownership less than 50 percent. These are the Southern New England Telephone Co., in which the American Co. owned 33.34 percent of the stock, at December 31, 1934, and Cincinnati and Suburban Bell Telephone Co., in which this interest was 29.72 percent. In the New England Telephone & Telegraph Co. the interest, at the same time, was 65.31 percent of voting stock, and in the Mountain States Telephone & Telegraph Co., 72.82 percent. In the Pacific Telephone & Telegraph Co. the American Co.'s voting interest is about 83 percent. In all the other companies the American Co. controls more than 99 percent, in most cases 100 percent, of the voting stock. This information, with relevant data as to the dates and places of incorporation of each of the associated Bell Telephone companies is given in table 4.

TABLE 3.—*Outstanding voting stock of combined associated operating companies and proportions thereof owned by American Telephone & Telegraph Co. and its associated companies, years 1900–35, inclusive, at 5-year intervals*

As of Dec. 31— (a)	Total par value of outstanding voting stock of associated operating companies (b)	Par value owned directly by American Telephone & Telegraph Co.		Par value owned directly by associated companies and indirectly controlled by American Telephone & Telegraph Co.		Total par value owned and controlled by American Telephone & Telegraph Co.	
		Amount (c)	Per cent of total (d)	Amount (e)	Per cent of total (f)	Amount (g)	Per cent of total (h)
1900.....	\$150,251,541	\$63,302,111	42.13	\$5,305,470	3.53	\$68,607,581	45.66
1905.....	267,922,761	139,872,295	52.21	30,577,625	11.41	170,449,920	63.62
1910.....	438,299,028	270,036,848	61.61	86,559,600	19.75	356,596,448	81.36
1915.....	534,596,828	373,700,178	69.90	97,786,850	18.29	471,487,028	88.19
1920.....	674,051,742	501,990,185	74.47	103,495,150	15.36	605,485,335	89.83
1925.....	1,068,324,750	973,882,907	88.67	16,829,000	1.53	990,711,907	90.20
1930.....	1,859,885,200	1,704,336,957	91.64	-----	-----	1,704,336,957	91.64
1935.....	2,106,278,100	1,958,394,657	92.89	-----	-----	1,958,394,657	92.89

NOTE.—The data shown in columns (b), (c), (e), (g), and (h) were taken from work sheets furnished by the American Co., which contained notations to the effect that the total par value of outstanding voting stock of the associated operating companies, as shown in column (b), excluded treasury stock after 1908 but it was not known whether all such stock had been excluded as of the end of 1908 and prior years.

Source: Exhibit 1362-A, table 2, p. 13.

Consolidations.

The expansion of telephone service, the necessity of interconnecting exchanges, and financial needs created thereby, led to the consolidation of the local telephone companies in contiguous areas into larger operating systems. This process continued unabated through 1925, when the local telephone system took approximately its present corporate organization. In the process of consolidation, the parent company, in many instances, extended its stock control over operating telephone properties.

As an example of the process by which the present associated companies evolved, the New England Telephone & Telegraph Co. may be cited. When it was incorporated in October 1883 under the laws of the State of New York, with an authorized capital of \$12,000,000, the

New England Telephone & Telegraph Co. absorbed the following companies which had operated in the New England States: ⁹¹

The Bay State Telephone Co.
Boston & Northern Telephone Co.
Granite State Telephone Co.
National Bell Telephone Co. of Maine.
Suburban Telephone Co.
Pioneer Telephone Co.
Cheshire Telephone Co.
Telephone Despatch Co. of Boston.

When these companies were absorbed by the New England Telephone & Telegraph Co., American Bell Telephone Co. owned \$240,000 par value of the outstanding common stock of the Bay State Telephone Co. and \$300,000 par value of the outstanding common stock of the Boston & Northern Telephone Co., representing, in each case, franchise stock received equal to 30 percent of their outstanding capital stock. American Bell Telephone Co. also owned the Telephone Despatch Co. of Boston, which was not a corporation, but was represented by certain telephone properties in Boston owned by the former and operated by it under this name. These telephone properties in Boston were sold to the New England Co. by American Bell for \$1,947,600 par value of capital stock, as compared with \$129,550 at which they were carried in investments by American Bell as of the date of sale. In addition, American Bell received \$4,268,000 par value of franchise stock from the New England Co., so that at the end of 1884 it owned \$6,215,600 par value, or 59.8 percent, of the \$10,394,600 par value of outstanding capital stock of the new company. Thus, in exchange for \$540,000 par value of the outstanding capital stock of two of the predecessor companies, representing minority interests of 30 percent in such companies, and its investments of \$129,550 in the telephone properties in Boston, or a total of \$669,550, American Bell received a controlling interest of 59.8 percent, or \$6,215,600 par value of the capital stock issued by the New England Telephone & Telegraph Co. in connection with the consolidation. It is evident from the foregoing that more than 50 percent of the \$10,394,600 par value of the capital stock of the new company outstanding at the end of 1884 was issued to American Bell for intangibles.⁹²

Some of the companies which were absorbed by New England Telephone & Telegraph Co. were, in turn, consolidations of other local small exchanges. For instance, the Bay State Telephone Co., which was incorporated in August 1882, under the laws of the State of Massachusetts, was the result of the consolidation of some five other local telephone systems, namely:⁹³

Massachusetts Telephone Co.
Northern Massachusetts Telephone Co.
Western Massachusetts Telephone Co.
Hampden Telephone Co.
Walpole Telephone Exchange.

The Boston & Northern Telephone Co., which was consolidated with the New England Telephone & Telegraph Co., was also, in turn, the result of the consolidation of the three following companies:⁹⁴

⁹¹ See exhibit 1362-B, p. 207.

⁹² Ibid., pp. 207-208 and 213-218.

⁹³ Ibid., p. 207.

⁹⁴ Ibid., p. 208.

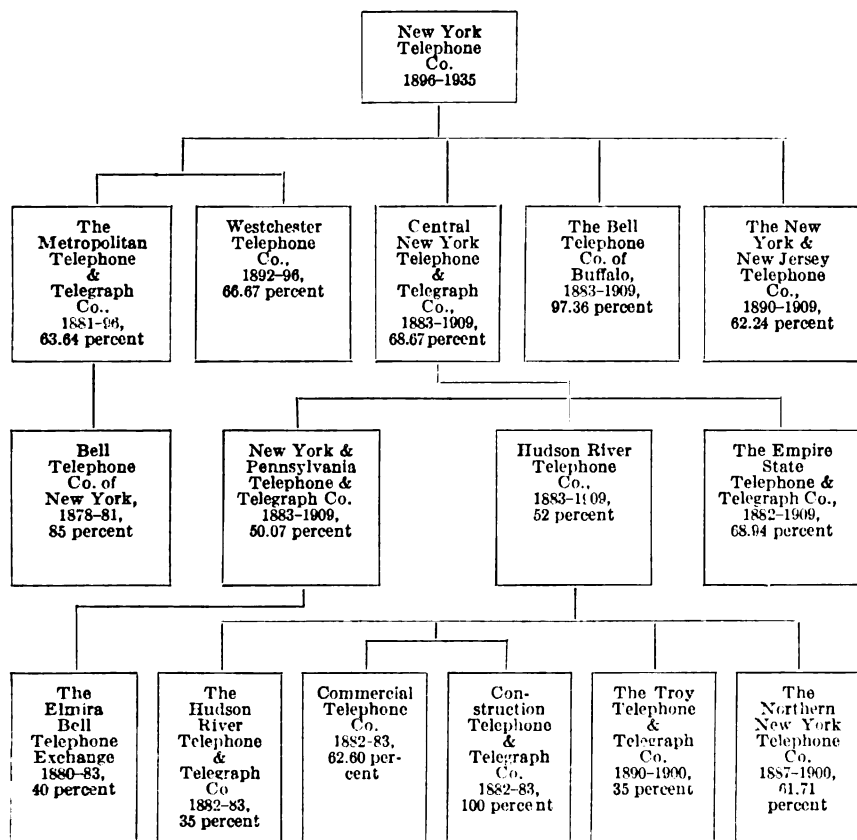
Ayer Telephone Exchange Co.
New Hampshire Telephone Co.
Portsmouth Bell Telephone Co.

To continue briefly the story of the major consolidations in which the New England Co. was involved, in 1899 it absorbed the Southern Massachusetts Telephone Co. through the issuance of one and one third shares of its capital stock for each of the outstanding shares of this company. In 1912 it purchased the American Co.'s minority interest of 32.97 percent in the outstanding capital stock of the Providence Telephone Co. and eventually absorbed this company in 1921, after it had acquired the outstanding shares of the company's capital stock held by others. These two merged companies were originally licensed by American Bell Telephone Co.⁹⁵

CHART 2

NEW YORK TELEPHONE CO. AND PREDECESSOR COMPANIES

(Investments in common stocks)



NOTE.—(1) Dates indicate period in which American Telephone & Telegraph Co. or its predecessors held common stock interests; (2) percentages indicate extent of ownership of common stock by American Telephone & Telegraph Co. or its predecessors at time of transfer of such stock to New York Telephone Co., or its predecessors.

⁹⁵ Ibid., pp. 220-224.

TABLE 4.—Incorporation data of associated Bell Telephone companies and the investment of American Telephone & Telegraph Co. in their stocks, notes, and advances as of Dec. 31, 1934

Item	Name of company (a)	Date of organization or incorporation (b)	State of incorpora- tion (c)	Capital stock ¹			Notes and advances (g)	Total (h)
				Par value of holdings (d)	Percent of total out- standing voting stock (e)	Amount of investment (f)		
1	New England Telephone & Telegraph Co.	October 1883	New York	\$27,094,200	65.31	\$92,045,721	\$23,750,000	\$115,795,721
2	The Southern New England Telephone Co.	April 1882	Connecticut	13,337,400	33.34	13,649,213	6,350,000	19,999,213
3	New York Telephone Co.	June 1886	New York	421,300,000	100.00	444,280,335	24,400,000	468,680,335
4	New Jersey Bell Telephone Co.	August 1904	New Jersey	120,395,200	100.00	134,062,384	34,700,000	168,762,384
5	The Bell Telephone Co. of Pennsylvania ²	September 1879	Pennsylvania	110,000,000	100.00	118,316,050	8,850,000	127,166,050
6	The Diamond State Telephone Co.	March 1897	Delaware	5,000,000	100.00	5,700,000	130,000	5,830,000
7	The Chesapeake & Potomac Telephone Co., New York	July 1883	New York	18,000,000	100.00	19,000,000	3,570,000	22,570,000
8	The Chesapeake & Potomac Telephone Co., Baltimore City	March 1884	Maryland	30,000,000	100.00	31,467,862	1,300,000	32,767,862
9	The Chesapeake & Potomac Telephone Co., Virginia	February 1905	Virginia	18,000,000	100.00	18,000,000	4,150,000	22,150,000
10	The Chesapeake & Potomac Telephone Co., West Virginia	May 1916	West Virginia	16,200,000	100.00	16,200,000	2,700,000	18,900,000
11	Southern Bell Telephone & Telegraph Co., New York	December 1879	New York	124,998,700	99.99	126,815,773	—	126,815,773
12	The Ohio Bell Telephone Co.	September 1921	Ohio	129,999,600	99.99	130,041,898	—	130,041,898
13	The Cincinnati & Suburban Bell Telephone Co.	July 1873	do	8,169,150	29.72	8,732,568	—	8,732,568
14	Michigan Bell Telephone Co. ³	January 1904	Michigan	109,987,607	99.99	110,400,210	25,599,820	136,000,030
15	Indiana Bell Telephone Co.	February 1920	Indiana	32,999,100	99.99	33,585,586	7,214,360	40,799,946
16	Wisconsin Telephone Co.	July 1882	Wisconsin	40,000,000	100.00	43,223,835	2,000,000	45,223,835
17	Illinois Bell Telephone Co. ⁴	January 1881	Illinois	148,943,200	99.30	154,428,999	—	154,428,999
18	Northwestern Bell Telephone Co.	August 1882	Iowa	95,000,000	100.00	96,039,490	2,399,698	98,439,188
19	Southwestern Bell Telephone Co. ⁵	August 1886	Missouri	172,988,800	99.99	176,231,878	—	176,231,878
20	The Mountain States Telephone & Telegraph Co.	July 1911	Colorado	34,987,500	72.82	36,362,463	13,050,000	49,412,463
21	The Pacific Telephone & Telegraph Co.	December 1906	California	218,015,600	83.05	205,846,397	6,050,000	211,896,397
22	Total			1,965,431,057	—	2,012,450,662	166,213,892	2,178,664,554

Another example of the process by which the Associated Companies now in existence have developed as a result of successive stages of consolidations is graphically indicated in chart 2. Each one of the companies shown on this chart was itself in turn the result of a long process of consolidations with smaller local operating companies.

A history of the corporate development of each of the present associated companies is presented in the five-volume report on "American Telephone & Telegraph Co., Security Investments"⁹⁶ introduced into the record of this investigation. At the present time, the United States is divided into operating territories as indicated in the map on page 67. The extent of territory, population, and telephone stations, by each associated company are detailed in table 21, page 68.

SECTION 3. CORPORATE HISTORY OF THE WESTERN ELECTRIC CO.

The corporate history of Western Electric and its predecessors comprises three distinct periods: pre-Western Electric; Western Electric Co., Inc., of Illinois; and Western Electric Co., Inc., of New York.

Pre-Western Electric History (1869-81).

Telephone manufacturing prior to 1881 was characterized by the early efforts of Thomas A. Watson, Bell's assistant, to supply the Bell Co.'s needs from the small shop of Charles Williams, Jr., located in Boston, and by the gradual transformation of independently owned telegraphic instrument shops to factories capable of manufacturing telephone equipment. This development is sketched briefly below.

Early telegraph instrument shops.—The early history of the Western Electric Co. is intimately related to the development of the telephone and telegraph as instruments of commercial use. Morse invented the telegraph in 1837. The scattered telegraph companies operating throughout the country were consolidated into the Western Union Telegraph Co. in 1856. At that time, several instrument shops manufacturing telegraph equipment had been consolidated into two shops, one located at Cleveland, Ohio, and the other at Ottawa, Ill. The Ottawa shop was taken over by the Western Union at the time of its purchase of the Caton lines (the Illinois-Mississippi Telegraph Co.). The Cleveland shop was sold to one George W. Shawk, who had been foreman of the Western Union repair shops. Shawk continued to do repair work for the Western Union, although a large part of such activity was still carried on in that company's Ottawa shop. In 1869, Enos M. Barton, chief telegraph operator for the Western Union at Rochester, N. Y., became Shawk's partner.⁹⁷

The partnership of Gray and Barton.—In 1869, the inventor, Elisha Gray, who had had the model work on his inventions done in Shawk's shop, purchased Shawk's interest and became Barton's partner. A few months later, Gen. Anson Stager, general superintendent of the Western Union, became an equal partner with Gray and Barton upon condition that the business of the shop be moved from Cleveland to Chicago. Each member of the partnership contributed \$2,500 to the capital.

⁹⁶ See exhibit 1362 A, B, C, D, E.

⁹⁷ See exhibit 1952, p. 3.

At the close of 1869, the partnership purchased a repair and model shop in Chicago, owned by L. C. Springer, and made it part of the Chicago shop. The business of the partnership consisted chiefly of the manufacture of Gray's private line telegraph printer, his needle enunciator for hotels, signal boxes and registers, fire alarm apparatus, and similar devices.⁹⁸

*Western Electric Manufacturing Co. (1872-81).*⁹⁹—In 1872, Gen. Anson Stager became vice president of the Western Union. Stager interested William Orton, president of the Western Union, in the purchase of an interest in his partnership with Gray and Barton. On March 29, 1872, a corporation known as the Western Electric Manufacturing Co., was organized under the laws of the State of Illinois. The original incorporators were Elisha Gray, Enos M. Barton, Gen. Anson Stager, Thomas Orton, and Stafford G. Lynch.

The new company took over the partnership of Gray and Barton and the assets of the Ottawa shop of Western Union. Capital stock was \$150,000, divided into 1,500 shares, each with a par value of \$100. The Western Union owned one-third interest in the new company, General Stager one-third, and friends of General Stager and employees of the new company the remaining one-third. Stager's position as vice president of the Western Union, together with the one-third interest purchased by the Western Union, gave that company control. Three of the five directors of the new company were directors of the Western Union. The machinery, tools, patterns, designs, business, personal property, and goodwill of the Ottawa shop were purchased by the issuance of stock through the new company to the Western Union, which owned the Ottawa shop. The Ottawa shop was closed, and the Western Union manufactured a part of its equipment at a shop owned by it in New York City, and purchased the remainder of its requirements from the Western Electric Manufacturing Co.

In 1875, Gray sold his interest to Milo G. Kellogg, bookkeeper and cashier of the new company and later inventor, and retired from the business.

Soon after Bell's invention of the telephone in 1876, the Western Electric Manufacturing Co. entered a new field. It began the manufacture of telephone equipment for the American Speaking Telephone Co., a subsidiary of the Western Union, which entered the telephone field in competition with the Bell System. The development by Edison of a satisfactory carbon transmitter for the American Speaking Telephone Co., together with the latter's use of the local wire systems of the Western Union or its subsidiaries, created considerable demand for telephone equipment manufactured by the Western Electric Manufacturing Co. As a further stimulus to business, the Western Electric Manufacturing Co., during the period 1878-80, assisted in the organization of telephone exchanges in the Middle West for the purpose of creating and controlling markets for telephone instruments and apparatus required by such exchanges.

As a result of these relations, the Western Electric Manufacturing Co. was in a position to make studies and observations with respect to necessary and desirable telephone equipment. Its organization

⁹⁸ *Ibid.*, p. 4.

⁹⁹ *Ibid.*, pp. 6-12.

was composed, in the beginning, of Gray, Warner, and Kellogg, and later of Scribner. It acquired patents on such telephone apparatus as it deemed useful. It developed a cord switchboard which proved more useful than the peg switchboard developed by the telegraph companies. Later, patents on the multiple switchboard, essential to the development of large exchanges, were purchased from Firman. Patents covering improvements on the multiple switchboard by Wilson, Haskins, Scribner, and Kellogg were also acquired.

In order to meet the needs of expanding activities, the Western Electric Manufacturing Co. enlarged its physical plant. The Kinzie Street Building in Chicago was purchased from General Stager in 1877, for \$25,000. In February 1879, the manufacturing shop of the Western Union located in New York City was leased for a period of 10 years. Western Electric Manufacturing Co. agreed to manufacture all the electrical apparatus required by the Western Union and to give that company the benefit, at cost, of all licenses and patents controlled by it.

As a result of its intimate relations with the Western Union Telegraph Co., the latter's subsidiary, the American Speaking Telephone Co., and the various telephone exchanges sponsored by itself, the Western Electric Manufacturing Co. had by this time become a large, if not the largest, manufacturer of telegraph and telephone apparatus and equipment in the United States.

On June 16, 1880, the capital stock of the company was increased from \$150,000 to \$300,000. The new stock was issued to stockholders of record as a 100-percent stock dividend.

In 1881, it purchased a controlling interest (61.1 percent) in the Gilliland Electric Manufacturing Co. of Indianapolis, Ind.

The settlement of November 10, 1879, between the Bell interests and the Western Union, together with the sale by the Western Electric Manufacturing Co. of its interest in the telephone exchanges in the Middle West in 1880, deprived the latter company of a large portion of its telephone business. Until 1878, all the telephone apparatus for the Bell licensees was manufactured by Thomas A. Watson, Bell's early assistant, in the shop of Charles Williams, Jr., located in Boston. This shop was unable to meet all the Bell System requirements. As a result, the National Bell Telephone Co. licensed other electrical manufacturing companies to manufacture telephone apparatus and equipment for Bell licensees. Those companies were: The Telephone & Telegraph Construction Co., licensed in 1878; Post & Co., of Cincinnati, Ohio; Davis and Watts, of Baltimore; the Electric Merchandising Co. of Chicago, licensed in 1879; and the Gilliland Electric Manufacturing Co. (formerly Indianapolis Telephone Co.) of Indianapolis, Ind.

The Western Electric Co. of Illinois (1881-1915).

The American Bell Telephone Co., organized April 17, 1880, adopted as its policy a three-point program developed by its general manager, Theodore N. Vail. This program included the following points: First, the establishment of the parent company, the American Bell Telephone Co., which would exercise financial control over local operating companies; second, the development of a system of long lines to connect local operating companies in a Nation-wide telephone system; and third, the acquisition of a manufacturing company closely associated with the telephone industry, which would be responsive to its

needs and which would be controlled by the parent company in the interest of the telephone industry rather than in the interest of the manufacturer. The available manufacturers of telephone equipment at the time were the Western Electric Manufacturing Co., of Chicago., Post & Co., of Cincinnati, Davis & Watts, of Baltimore, the Electric Merchandising Co. of Chicago, Gilliland Electric Manufacturing Co., of Indianapolis, and the Telephone & Telegraph Construction Co. There was also the Charles Williams, Jr., shop, located at Boston, which was owned by the American Co. The American Bell Telephone Co. decided to acquire control of a company manufacturing telephone equipment and purchased a substantial interest in the Western Electric Manufacturing Co. as the first step.¹

The American Bell Telephone Co. acquired, in July 1881, 40 percent of the capital stock of Western Electric Manufacturing Co. Western Electric Co., Inc., of Illinois was organized on November 26, 1881, to consolidate Western Electric Manufacturing Co., Gilliland Electric Manufacturing Co., and the manufacturing establishment of Charles Williams, Jr. The authorized capital stock of the new company was \$1,000,000, divided into 10,000 shares of \$100 par value. Of this, 6,000 shares were issued to Western Electric Manufacturing Co. for its net assets excluding its interest in Gilliland Electric, and in the Irwin patents. For the net assets of Gilliland Electric, 800 shares were issued, and 1,200 went for the Charles Williams, Jr., properties. American Bell received 2,000 shares in consideration of its grant to Western Electric Co., Inc., of Illinois of a permanent exclusive license to manufacture telephones and telephone equipment under the Bell patents. Mainly through receipt of this 2,000 shares, American Bell's 40-percent ownership of the stock of Western Electric Manufacturing Co. became slightly more than a majority holding of the stock of Western Electric Co., Inc., of Illinois.²

*Manufacturing contract of February 6, 1882.*³—The first business undertaken by the Western Electric Co. of Illinois was to authorize its president and vice president to enter into negotiations with the American Bell Telephone Co. for the purpose of executing a contract as provided for in the preorganization agreement whereby the Western Electric Co. of Illinois would obtain the exclusive license to manufacture all telephones and telephone apparatus for the Bell System covered by the patents owned and controlled by the American Bell Telephone Co. Such a contract was made on February 6, 1882. By its terms, the Western Electric Co. of Illinois became the exclusive manufacturer in the United States of telephones under patents owned and controlled by the American Bell Telephone Co. It was authorized to sell telephone appliances under American Co. and Western Electric patents to the American Co. and its licensees only, with provisions restricting the resale of such appliances. Western was given the exclusive right to manufacture telephones for the American Co., which in turn leased them to licensees. The American Co. was given an option to purchase patents owned by the Western Electric Co. on switchboards and other telephone apparatus.

Execution of this contract assured the American Bell Telephone Co. of a dependable source of supply for telephone instruments and appliances. Not only was price control over telephone equipment

¹ Ibid., pp. 12-13.

² See exhibit 1362-E, pp. 1330-1334, and appendix 58.

³ See exhibit 1962, pp. 16-18. For a copy of this contract see *infra*, p. 613.

assured, but uniformity of design as well. The associated companies were not obligated to purchase any equipment from the Western Electric Co. However, as a matter of practice, almost all of their requirements had to be purchased from the Western Electric Co. The American Co. required the use by its licensees of equipment built according to American Co. specifications. The specifications were usually such as could be met only by the Western Electric Co. Also switchboard equipment was not interchangeable. Once an operating company installed a Western Electric switchboard, additions thereto necessarily had to be made of the same type and design. Inasmuch as the Western Electric Co. was the exclusive manufacturer of equipment under patents owned either by it or the American Co., and could sell only to American Co. licensees, the latter necessarily had to purchase their requirements from the Western Electric Co.

Pursuant to the terms of the 1882 contract, the American Bell Telephone Co. was requested to terminate, and did terminate, the contracts made between Post & Co. and the National Bell Telephone Co., dated June 27, 1879; between Davis & Watts and the National Bell, dated June 24, 1879; and between the Electric Merchandising Co. and the National Bell, dated June 11, 1879. Thus, the Western Electric Co., Inc., of Illinois became the exclusive manufacturer of telephones in the United States for the American Bell Telephone Co.

*Modification of 1882 contract.*⁴—On April 8, 1908, the contract of February 6, 1882, between the American Bell Telephone and the Western Electric Co., Inc., of Illinois, was amended to permit the Western Electric Co. to sell telephone equipment to telephone companies which were not licensees of the Bell System, subject to certain restrictions.⁵ The reason assigned was the desire on the part of the American Co. to secure uniformity of equipment among non-Bell companies, so as to facilitate their connection with the Bell System long lines, and the development of unoccupied territory. The development of toll lines was quite rapid after the invention of loading coils in 1899. Three other circumstances undoubtedly were responsible in part for the modification of the 1882 contract. In 1908 the Roosevelt administration was vigorously enforcing the antitrust laws. Also, Thomas B. Lockwood, patent attorney for the American Co., in a memorandum addressed to Theodore N. Vail, president, dated August 6, 1907, indicated that, with few exceptions, no basic patents in telephony at that time were exclusively the property of the Bell System.⁶ The Western Electric Co., could enlarge its market by selling to independents. Finally, competition with independent manufacturers might result in their elimination. Earlier efforts to purchase the Stromberg-Carlson Telephone Manufacturing Co. and the Kellogg Switchboard & Supply Co. had failed.⁷

*Standard Supply Contract.*⁸—The 1882 contract provided Bell licensees with a complete line of telephone equipment and apparatus, but made no provision for supplies, such as cross arms, pole-line hardware, insulators, etc. The Bell licensees purchased these supplies in the open market and competed with one another for such supplies. Each licensee had to maintain purchasing and warehousing organiza-

⁴ See exhibit 1952, pp. 18-19. For a copy of the modified contract see *infra*, p. 613, of this report.

⁵ See exhibit 1989, appendix 5.

⁶ *Ibid.*, pp. 28-31.

⁷ See *infra*, p. 137.

⁸ See exhibit 1952, pp. 10-22. For copy of a representative present-day standard supply contract, see *infra*, p. 619, of this report.

tions. After its organization the Western Electric Co. gradually undertook the jobbing of general electrical supplies in addition to its manufacturing activities. In competition with other suppliers it gradually secured a large part of this business from the Bell licensees. By 1900 it was a large, if not the largest, distributor of cross arms, pole-line hardware, insulators and other electrical supplies, distributed from conveniently located supply houses.

The first supply contract was executed in 1901, between the Western Electric Co. and the Bell Telephone Co. of Philadelphia. Under its terms, the Western Electric Co. assumed the function of purchasing and warehousing of supplies for the Bell Telephone Co. of Philadelphia. The contract proved satisfactory, and thereafter the American Co. encouraged the associated companies to negotiate standard supply contracts with the Western Electric Co. By 1913 the supply contract had been adopted by all of them.

The Western Electric Co. of New York, (1915-37).

The Western Electric Co., Inc., of New York, was organized on November 17, 1915. It is the present-day organization of the Western Electric Co. The new corporation took over all the assets and liabilities of the Western Electric Co., Inc., of Illinois. The authorized capital stock was \$15,750,000, of which \$15,000,000 represented 150,000 shares of 6-percent preferred stock with a par value of \$100 per share, and \$750,000 represented 150,000 shares of no par common stock with an indicated value of \$5 per share. On January 1, 1936, there were 6,000,000 shares of common stock, with a stated book value of \$142,500,000.⁹

Various reasons were advanced by the company for the reorganization under the laws of New York. Among these were: The almost impossible tax situation in Illinois; a desire to adjust operations of the company to harmonize with actual conditions; a desire to capitalize the company's surplus but to avoid the publicity which might attend a more obvious "melon cutting"; and a desire to enlarge the corporate activities to include some which were authorized under the laws of New York, but which were of doubtful validity under the laws of Illinois.¹⁰

Changes in corporate structure.—The New York Corporation has made frequent use of the more liberal New York laws permitting greater freedom of corporate activity than would have been possible under the laws of Illinois as they existed in 1915. Western increased its stockholdings in other corporations, usually by incorporating certain of its departments as separate corporations and continuing its control over their activities. Also, on March 25, 1920, the board of directors authorized an issue of \$35,000,000 of 5-year, 7-percent, convertible gold bonds, of which \$24,679,000 was converted into 7-percent preferred stock on October 1, 1922. In 1915 and 1917, 6-percent cumulative preferred stock was issued and an issue of 7-percent cumulative preferred stock was made in 1922, both without voting privileges.

Upon organization in November 1915, the Western Electric Co. of New York issued 1 share of no-par common and 1 share of 6-percent preferred stock for each share of common stock outstanding of the Western Electric Co. of Illinois. The principal reasons for this

⁹ See exhibit 1952, p. 23.

¹⁰ See exhibit 2090-A, pp. 32-33, and exhibit 2090-D, appendix 5.

change in capitalization were a desire to decrease the amount of dividends on each share of common stock without impairing the total return to the parent company, the American Co., which owned most of the common and preferred stock; and a desire to issue stock dividends on each share of stock without impairing surplus. This is indicated by the 50-percent stock dividend of 250,000 shares on September 30, 1925, and a split-up from 750,000 shares to 3,750,000 shares on May 25, 1927, neither of which caused any reduction in surplus. From November 18, 1915, to December 31, 1925, there was no account designated as "surplus" on the books of the company. At December 31, 1925, some \$25,500,000 was transferred to surplus, as of the beginning of the year, leaving \$1,500,000 accumulated surplus in the common-stock account. During the period 1927-32, inclusive, various transfers were authorized between surplus and capital account, which, on a net basis, amounted to zero.¹¹

The following changes in corporate structure occurred:

(1) *Bell Telephone Laboratories, Inc.*—The Bell Telephone Laboratories, Inc., of New York was organized on December 27, 1924, as a separate company, with headquarters in New York City, and began operations on January 1, 1925. The new corporation was owned jointly by the Western Electric Co., Inc., of New York, and the American Co., each company owning 50 percent of the stock. The technical and engineering work of the Bell System had, ever since 1882, been conducted by two separate organizations—the engineering department of the American Bell Telephone Co. or of the American Telephone & Telegraph Co., and the engineering department of the Western Electric Co. The rapid growth of research and development work carried on by these two departments and the close relationship between them, as well as the need for further coordination of scientific work in the communications field, were assigned by the company as reasons for concentrating such activities in a single organization.¹²

(2) *The Graybar Electric Co.*—Western disposed of its general electrical supply business, except that with the Bell System licensee companies, through the organization under the laws of New York of a separate corporation, the Graybar Electric Co., Inc., on December 11, 1925, which was 100 percent owned by the Western Electric Co.; and the sale of stock of the Graybar Electric Co., Inc., on November 28, 1928, to the Graybar Management Corporation, in which the employees of the Graybar Electric Co., Inc., acquired an interest subject to the restriction of the sales contract. By the terms of this sales contract, control of the Graybar Management Corporation remains in the Western Electric Co. until certain conditions have been fulfilled. The reason assigned by the company for the organization of the Graybar Electric Co. was the continued expansion of the Bell System, with the consequent additional requirements for telephone service and facilities, which made it desirable to concentrate the productive efforts of the Western Electric Co. in the telephone field. The Graybar Co. sells telephonic equipment manufactured by Western to non-Bell customers. In addition, it sells, under its trade name, various electrical apparatus and supplies, such as motors, generators, electric lamps, industrial and other lighting equipment, household

¹¹ See exhibit 1952, p. 25, and exhibit 2090-A, pp. 32-34.

¹² See exhibit 1952, p. 25.

appliances, poles, pole-line equipment, wire, cable, and electrical accessories of all kinds.¹³

(3) *Electrical Research Products, Inc.*—On December 30, 1926, the Electrical Research Products, Inc., a Delaware corporation, was organized to take over the commercial development of electrical devices and inventions controlled by Western which were not suitable for distribution through the Graybar Co. The new company was 100-percent owned by Western. It was stated that the new company was formed in order to separate the byproducts business of Western, such as sound motion-picture equipment, public-address systems, etc., developed by the Bell Telephone Laboratories, Inc., from the telephone business proper, so that Western might devote itself primarily to the telephone business. The products sold and distributed by Electrical Research Products, Inc., are developed and patented by the Bell Telephone Laboratories, Inc. Electrical Research Products, Inc., does no manufacturing, but grants licenses to other companies to manufacture, use, and sell machines, apparatus, methods, and processes developed by the Bell Telephone Laboratories, Inc. It leases equipment of Western Electric Co. manufacture to various licensees. In addition to leasing sound motion-picture equipment and public-address systems manufactured by the Western Electric Co., it sells the following manufactured products of Western: Permalloy, magnetic alloys, race-timing equipment, photo-electrical cells and devices, stroboscopic adjustment devices for watches, vacuum tubes, etc.¹⁴

(4) *Sale of International Western Electric Co.*—The various branches established by Western Electric Co. at various dates between 1882 and 1915 were gradually converted to foreign corporations under the laws of the country in which located. On June 1, 1918, the International Western Electric Co. was organized as a subsidiary of Western Electric Co., Inc., of New York to takeover the latter's interest in these foreign corporations. The newly organized International Western Electric Co. owned from 10 to 100 percent interest in affiliated companies in the following countries: England, France, Belgium, Norway, Switzerland, Austria, Hungary, Russia, Italy, Australia, South Africa, Canada, Argentina, China, and Japan.

As of September 30, 1925, the Western Electric Co., Inc., of New York, sold the International Western Electric Co. to the International Telephone & Telegraph Corporation. The name of the International Western Electric Co. was thereupon changed to the International Standard Electric Co., which became the manufacturing subsidiary of the International Telephone & Telegraph Corporation. The sale agreement provided, among other things, that all the outstanding shares of capital stock of the International Western Electric Co., which consisted of 55,000 shares of preferred stock and 100,000 shares of common stock, as well as the demand promissory notes held by the Western Electric Co., should be passed to the International Telephone & Telegraph Corporation.

The Western Electric Co. received \$29,306,534 from the sale of International Western Electric Co. The report to stockholders of Western Electric Co. for the year ended December 31, 1925, states that the profit resulting from the sale of International Western Electric Co., Inc., after deducting Federal income taxes, and setting aside

¹³ Ibid., pp. 25-26.

¹⁴ Ibid., pp. 26-27.

reserves for pension fund under the agreement with International Standard Electric Corporation, was \$6,255,096. In addition to this profit the Western Electric Co. received from International Western Electric Co. a special dividend of \$9,700,000, just prior to the sale.¹⁴

On October 1, 1925, the Western Electric Co., Inc., of New York, entered into a contract with the International Western Electric Co., subject to the terms of the contract of sale between the Western Electric Co., Inc., of New York, and the International Telephone & Telegraph Corporation, under the terms of which the International Western Electric Co. agreed to pay the Western Electric Co., Inc., of New York, a royalty of one-half of 1 percent upon the sales of apparatus, whether patented or unpatented, made by the International Standard Electric Co. (successor to the International Western Electric Co., Inc.), in return for technical information and other services rendered the International Standard Electric Co. by the Western Electric Co., Inc., of New York. This contract further provided for an exchange of patent rights and patent and technical information in matters relating to telephony and telegraphy. Excluded therefrom were patents and patent rights relating to television, all graphic and printed matter, sound-recording apparatus, telephone apparatus in aid of deaf, submarine signaling apparatus, direction finding and radio goniometry. The contract was made for a period of 15 years, during which time the International Standard Electric Co. agreed to act as the exclusive distributor of certain products for export of the Western Electric Co. in all countries of the world except the United States, Canada, and Newfoundland. This contract permits the Western Electric Co. to continue to secure profits from the sale of manufactured telephone apparatus and equipment in foreign countries.

The sale of the International Western Electric Co. to the International Telephone & Telegraph Corporation limited the geographic sphere of the Western Electric Co. substantially to the United States, Canada, and Newfoundland.

(5) *Weco Realty Corporation*.—In 1929 the Weco Realty Corporation was incorporated under the laws of the State of New York as a wholly owned subsidiary of the Western Electric Co. It was a real-estate holding company, organized for the purpose of holding certain real-estate securities of the Western Electric Co. Its capital structure consisted of 250 shares of common stock, each with a par value of \$100, making a capitalization of \$25,000.

(6) *Weco Corporation*.—On May 14, 1930, the Weco Corporation was organized under the laws of Delaware as a wholly owned subsidiary of the Western Electric Co., for the purpose of purchasing and dealing in real estate and personal property of every description, acquiring property and assets from other corporations, holding and dealing in patents, owning securities in other corporations, making contracts of various kinds, and issuing its own securities. Its authorized capital stock consisted of 100,000 shares of no-par value. The Weco Corporation took over, among other things, the frozen assets of Electrical Research Products, Inc., particularly those relating to interests in motion-picture companies and theaters, for the purpose of liquidating them. It was dissolved on June 12, 1934, and its holdings turned back

¹⁴ See exhibit 2090-B, pp. 395-401.

to the Western Electric Co. and to the Electrical Research Products, Inc.¹⁶

(7) *Teletype Corporation*.—As of September 30, 1930, the American Telephone & Telegraph Co. acquired the entire outstanding stock of the Teletype Corporation, a manufacturer of teletypewriter equipment. The consideration paid by the American Co. was 150,000 shares of common stock of the American Co. for all of the common stock of the Teletype Corporation, and \$1,467,795 for all of the preferred stock of the Teletype Corporation. The common stock so acquired by the American Co. was immediately transferred by it to Western Electric Co. for \$30,000,000. The preferred stock of Teletype Corporation was purchased by Western from the American Co. at the same price paid by the American Co.¹⁷

(8) *Nassau Smelting & Refining Co., Inc.*—On October 30, 1931, the Western Electric Co. acquired a 100-percent interest in a reclamation unit, consisting of the business of the Nassau Smelting & Refining Co., Inc., and the plant and inventory of the Tottenville Copper Co., located on Staten Island, N. Y. Included in such purchase was the Argus Smelting Co. The latter company and the Tottenville Copper Co. were wholly owned but inactive subsidiaries of the Nassau Smelting & Refining Co., Inc. The purchase was made in order to provide Western with facilities for the reclamation of scrap metal which was accumulated in the manufacturing operations of the Western Electric Co. and from material removed from Bell System plant.¹⁸

Position of the Western Electric Co. in the Bell System.—The manufacturing contract of 1882 between the American Bell Telephone Co. and Western, together with the standard supply contracts between the Western Electric Co. and the associated companies, established Western's position in the Bell System. Generally, its function is twofold: First, it is the manufacturing branch of the Bell System; and second, it is the purchasing and supply department of the Bell System. In connection with its latter function, Western is also a developer, storekeeper, installer, repairer, salvager, and junker of the Bell System. As developer, Western develops devices needed by the associated companies for the rendition of telephone service. Since 1925 such work has been carried on by the Bell Telephone Laboratories, Inc., which is jointly owned by Western and the American Co. As storekeeper, Western maintains large quantities of telephone apparatus, equipment, and supplies at conveniently located warehouses which are readily accessible to the associated companies. As installer, Western maintains 13 offices in principal cities to install central-office equipment purchased from them by associated companies. As repairer, Western maintains shops in principal cities where used equipment removed from service is reconditioned for service in the associated companies. As salvager and junker, Western reclaims or finds a market for unserviceable and obsolete equipment of the associated companies.¹⁹

¹⁶ See exhibit 1952, p. 27.

¹⁷ See exhibit 1362-E, pp. 1397-1398.

¹⁸ Western Electric Co., Inc., Report to Stockholders for the year ending Dec. 31, 1931, p. 11.

¹⁹ See exhibit 1952, pp. 22-23.

CHAPTER 2

GROWTH OF THE BELL SYSTEM

In the foregoing chapter the various agencies of the Bell System which have been utilized in carrying on the activities undertaken from time to time have been described. In this chapter a concise statistical view of growth is presented. This historical survey deals with the commonly used measures of the magnitude of telephone business, such as assets and liabilities, revenues, telephone stations, wire mileage, traffic, and number of employees. The facts are presented in four sections, namely, those relating to the Bell System as a whole, the parent companies, the Associated Telephone Cos., and Western Electric Co. For brevity, the tables give the relevant information by 5-year intervals except that it is given for each year between 1930 and 1935 in order to show the critical years of the depression period. More complete discussion of the development of the various parts of the Bell System will be found in detailed reports prepared by the investigational staff which are a part of the record in Federal Communications Commission Special Telephone Investigation, Docket No. 1.¹

SECTION 1. GROWTH OF THE SYSTEM AS A WHOLE

The expansion of the Bell System is characteristic of the development of the telephone industry in the United States, with the exception of the period 1894 to 1907, when the independent telephone interests gave an additional impetus and themselves constituted an important factor in the industry.² For over 25 years, however, the independent interests have occupied a stationary position in the telephone field—that is, the size of the independent properties has remained relatively stationary; indeed, if anything, it has declined somewhat. The Bell companies, on the other hand, have expanded by leaps and bounds, partly by acquisition of independent properties, but principally due to the increasing demand for telephone service, which has become a necessity of modern life.

The facts briefly depicted in this section relate to what is generally referred to as the Bell Telephone System. They include American Bell Telephone Co. to 1900; American Telephone & Telegraph Co. from 1885 to 1900 as the long-distance company, and from 1900 to 1935 as the holding company; the long lines department of the American Co.; and the licensees of the American Bell and American Telephone & Telegraph Co., generally known as the Associated Bell Telephone Cos. The statistics in this section do not include Western Electric Co., or Bell Telephone Co. of Canada, or any of the other companies aside from the associated companies in which American

¹ See exhibits 135; 1360-A, B, and C; 1364; and 2090-A, B, and C.

² On the development of independent telephone companies, see *infra*, pp. 129-139.

Telephone & Telegraph Co. has a direct interest, except insofar as they appear as investments in the total assets. Nor do they include facts pertaining to the subsidiaries of associated companies, of which there have been a considerable number, though small in size and importance, except the sublicensees of Pacific Telephone & Telegraph Co., which are considered as associated companies.

Growth of Assets.³

The exceptional development of the Bell System is reflected in the increase in the magnitude of total assets and telephone plant as shown in table 5 and chart 3. It is there shown that by 1885 the Bell System had acquired total assets of some \$60,000,000. Total assets doubled in the next 10 years, reaching little over \$120,000,000 in 1895. This was the period of patent monopoly and high rentals on telephone instruments. In the next 10-year period, under the impetus of competition from independent telephone interests and lower rentals on instruments, Bell System's business grew rapidly and total assets more than trebled, reaching \$452,700,000 in 1905. During the succeeding 10-year period, the assets more than doubled, reaching a total of more than \$1,000,000,000 in 1915; and during the next decade they almost trebled, reaching little short of \$3,000,000,000 in 1925. The greatest growth in total assets came during the post-war boom from 1920 to 1930, when total assets increased from \$1,634,000,000 to \$5,000,000,000. During the next 5 years, Bell System telephone business experienced the first serious decline, and construction was radically curtailed. Consequently, by the end of 1935 total assets had increased only to \$5,037,000,000.

TABLE 5.—*Growth of the Bell System as reflected in its principal balance-sheet data as of Dec. 31, 1885, to 1930, inclusive, at 5-year intervals, and as of Dec. 31, 1931, to 1935, inclusive*

As of Dec. 31	Total assets	Telephone plant ¹	Capital stock ²	Long-term debt	Surplus and reserves ³
(a)	(b)	(c)	(d)	(e)	(f)
1885.....	\$60,081,500	\$38,618,600	\$38,229,200	\$367,400	\$18,866,000
1890.....	84,102,200	58,512,400	43,792,800	7,796,100	29,212,200
1895.....	120,385,000	87,858,500	57,482,700	12,074,100	44,710,200
1900.....	230,225,900	180,699,800	130,006,900	51,137,900	35,497,800
1905.....	452,716,100	368,065,300	238,531,100	128,079,500	63,693,000
1910.....	753,323,720	610,999,964	344,645,430	267,358,639	119,598,526
1915.....	1,057,907,703	880,068,520	440,711,200	355,641,384	223,401,663
1920.....	1,634,240,533	1,363,826,327	511,493,407	595,924,216	444,039,203
1925.....	2,938,003,819	2,524,905,590	1,144,618,690	891,006,995	748,250,136
1930.....	5,000,195,501	4,043,421,739	2,155,052,726	1,116,567,223	1,524,381,451
1931.....	5,024,335,551	4,195,063,589	2,172,897,419	1,055,761,529	1,590,401,166
1932.....	4,901,575,912	4,188,749,128	2,111,114,130	1,044,476,459	1,578,179,769
1933.....	4,907,078,603	4,169,360,872	2,109,718,024	1,037,624,760	1,504,651,948
1934.....	4,951,896,134	4,177,950,148	2,106,186,655	1,038,824,685	1,623,826,744
1935.....	5,037,141,551	4,196,671,227	2,100,474,580	1,078,377,463	1,673,161,031

¹ Excludes general equipment.

² Includes capital stock installments.

³ Includes premium on capital stock and depreciation reserves.

Source: Exhibit 1360-A, tables 7 and 27, pp. 52 and 102, respectively.

The major item in the total assets of the Bell System was, of course, telephone plant. In 1885, telephone plant accounted for \$38,600,000, and in 1935, for \$4,200,000,000. Total telephone plant showed the same characteristics of growth as total assets, the greatest advances taking place between 1920 and 1930.

³ Financial statistics in the text are rounded out to the nearest hundred thousand or to the nearest million. The exact figures are given in table 5.

Growth of Liabilities.⁴

Commensurately with total assets, total liabilities expanded enormously. Total par value of capital stock and stock installments of the parent company and those of the associated companies outstanding in the hands of the public grew from \$38,000,000 in 1885 to \$2,100,000,000 at the end of 1935. Long-term debt and surplus and reserves also increased considerably, but not as markedly as stock. Up to 1895, long-term debt was seldom over 10 percent of total assets. In 1895, it amounted to \$12,000,000. During the succeeding 5-year intervals, long-term debt accounted for between 30 and 35 percent of total assets, reaching \$355,600,000 in 1915, and \$596,000,000 in 1920. In this latter year, long-term debt was greater than capital stock, which stood at \$511,000,000. In the next decade from 1920 to 1930, long-term debt increased from \$596,000,000 to \$1,116,000,000, whereas capital stock quadrupled, increasing from \$511,000,000 to \$2,155,000,000. At the end of the period, total long-term debt was \$1,078,000,000, or a little over 20 percent of total assets.⁵

Premium on capital stock, surplus, and reserves constituted a large item in the total liabilities of the Bell System in 1920, 1925, 1930, and 1935. During these years surplus and reserves were more than 25 percent of the total liabilities. They amounted to \$1,673,000,000 at the end of 1935.

TABLE 6.—*Growth of the Bell System as reflected in its principal income data for the years 1885 to 1930, inclusive, at 5-year intervals, and for the years 1931 to 1935, inclusive*

Year ended Dec. 31 (a)	Revenues (b)	Net earnings (c)	Net income (d)	Dividends paid (e)	Undistributed net income (f)
1885.....	\$10,033,600	\$4,909,300	\$4,881,600	\$3,107,200	\$1,774,400
1890.....	16,212,100	7,144,600	6,865,800	4,101,300	2,764,500
1895.....	24,197,200	8,708,800	8,053,300	5,066,900	2,986,400
1900.....	46,285,600	15,758,200	13,363,600	7,893,500	5,470,100
1905.....	97,500,100	31,310,700	25,474,400	15,817,500	9,656,900
1910.....	165,612,881	50,994,408	39,437,544	26,160,736	14,276,758
1915.....	239,909,649	66,181,757	48,086,114	32,897,065	15,189,049
1920.....	458,140,656	79,506,168	47,785,065	36,998,579	7,785,496
1925.....	761,376,740	182,443,595	136,502,931	93,242,657	43,260,274
1930.....	1,151,965,344	267,874,425	201,645,905	156,625,142	45,020,763
1931.....	1,112,537,717	258,098,980	193,376,178	180,904,344	12,474,834
1932.....	974,121,058	194,471,039	159,336,239	185,032,048	(45,695,809)
1933.....	894,181,485	182,036,381	128,584,948	183,239,975	(54,655,027)
1934.....	899,454,047	190,903,623	133,342,629	183,180,517	(49,837,888)
1935.....	948,644,107	197,460,627	145,088,100	183,145,146	(38,057,046)

Parentheses denote that dividends paid exceeded net income.

Source: Exhibit 1360-A, tables 8 and 28, pp. 54 and 109, respectively.

Revenues.

The revenues of the Bell System show an increase comparable to the growth of total assets. As indicated in table 6, total revenues increased from \$10,000,000 in 1885 to \$1,152,000,000 in 1930, and were about \$949,000,000 in 1935 after having reached a low of \$894,000,000 in 1933. Although the greatest percentage increase took place in the decade 1895-1905, when total revenues quadrupled from \$24,200,000 to \$97,500,000, the largest gross amount of increase came in the years 1920 to 1930, when they grew by nearly \$700,000,000, from \$458,-

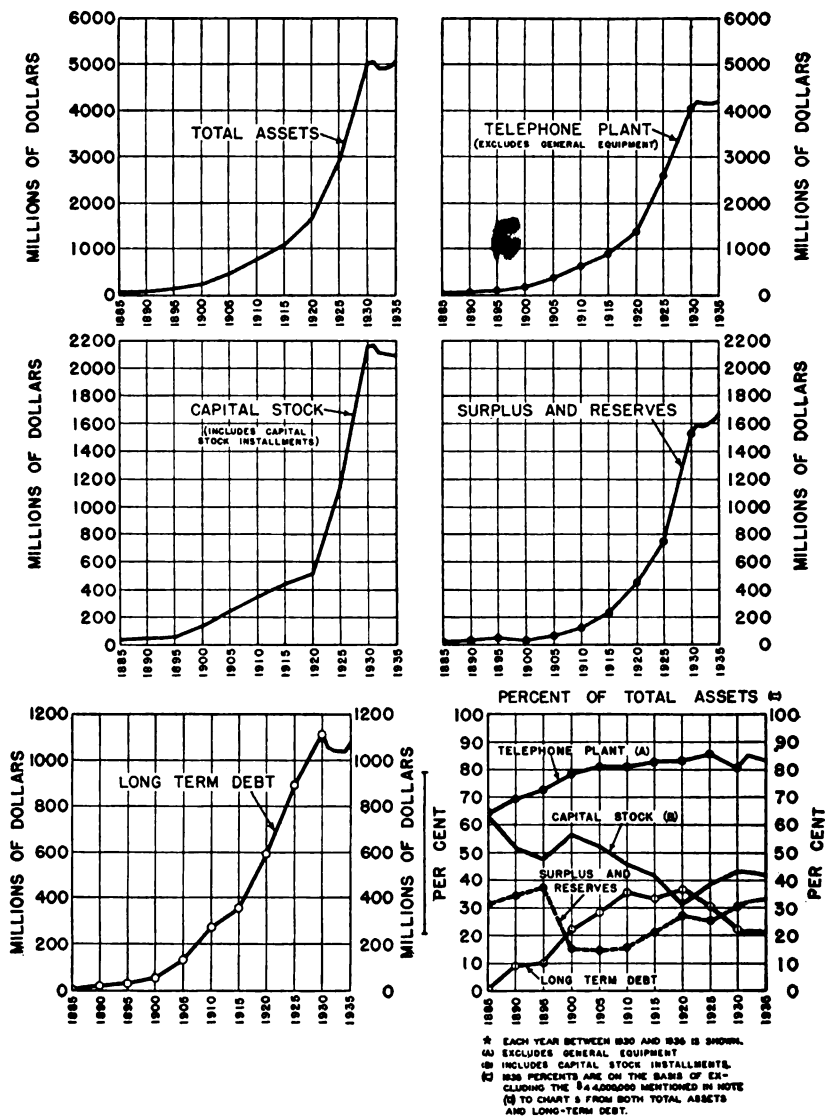
⁴ Liabilities as referred to in this chapter must be taken in a balance sheet sense, and not as legal obligations. Some items, such as bonds, are also legal obligations, of course. But when common stock, or reserves, are referred to as liabilities the purpose is to characterize them as component parts of liabilities' side of the balance sheet.

⁵ See exhibit 1360-A, table 27, p. 102, for year-by-year relationship of the principal liability items.

CHART 3

BELL SYSTEM
PRINCIPAL BALANCE SHEET DATA
AND RELATIVE SIZE OF SUCH DATA
AT FIVE-YEAR INTERVALS *

AS OF DECEMBER 31, 1885 TO 1935, INCLUSIVE



000,000 to \$1,152,000,000. Net income has also grown by leaps and bounds, reaching nearly \$202,000,000 in 1930, receding to \$129,000,000 in 1933 and being \$145,000,000 in 1935. Since 1935 net income has regained most of its lost ground. The total dividend payments continued upward to a peak of \$185,000,000 in 1932, and were \$183,000,000 in 1935.⁶

Operating Statistics.

To the end of 1930 there was constant growth in the number of Bell-owned telephone stations, central offices, total wire mileage, the amount of traffic and the number of employees. Subsequent to 1930 certain of these items showed decreases and increases as indicated in table 7 and chart 4. Between 1885 and 1895 the increase in the number of Bell-owned telephone stations was very gradual, having only doubled from 155,751 stations to 309,502 stations. This was the period of patent monopoly, with only Bell System stations in service, upon which high rentals were charged which had, of course, a retarding effect upon the development of the industry. But in the next 5 years, under the impetus of competition from independents, the number of Bell-owned stations increased more than two and one-half times to 835,911 in 1900. It is of interest to note that during these same 5 years, the independent telephone interests which had entered the field only in 1894 had established over 500,000 stations of their own. Thus, in that year, there were 1,355,911 stations in operation in the United States. In the next 5 years, from 1900 to 1905, there was an increase of over 1,400,000 in the number of Bell-owned telephone stations, the total being 2,284,587 at the end of 1905. During this same period, independent stations increased by more than 1,000,000. The total number of stations in the United States in 1905 was 4,126,924.⁷ This development was due to the influence of competition and the lowering of rental charges.⁸

TABLE 7.—Growth of the Bell Telephone System as reflected by plant and operating statistics, years 1885 to 1930, inclusive, at 5-year intervals, and the years 1931 to 1935, inclusive, as of end of year

Year	Total Bell-owned stations	Total miles of wire	Total central offices	Total number of employees ¹	Total pay roll ²	Average daily total conversations
(a)	(b)	(c)	(d)	(e)	(f)	(g)
1885.....	155,751	155,791	1,165	³ 5,766	-----	755,742
1890.....	227,857	331,642	1,241	8,740	-----	1,444,161
1895.....	309,502	675,415	1,613	⁴ 14,699	-----	2,402,543
1900.....	835,911	1,961,801	2,775	37,067	-----	5,817,514
1905.....	2,284,587	5,779,918	4,532	89,661	-----	13,911,551
1910.....	3,933,056	11,642,212	4,933	121,310	-----	22,284,010
1915.....	5,968,110	18,505,545	5,300	155,294	\$99,454,302	26,002,829
1920.....	8,333,979	25,377,404	5,702	231,316	263,729,030	33,162,600
1925.....	12,035,224	45,473,540	6,017	293,095	381,857,078	48,800,470
1930.....	15,682,059	76,248,265	6,585	324,343	534,468,061	65,298,095
1931.....	15,407,425	79,239,198	6,645	294,766	483,614,147	64,905,228
1932.....	13,793,229	80,491,073	6,778	266,357	414,341,515	61,064,000
1933.....	13,162,905	80,280,772	6,763	⁵ 248,497	356,286,843	57,246,000
1934.....	13,457,888	80,118,447	6,799	⁵ 248,957	371,727,262	58,790,000
1935.....	13,923,301	80,458,142	6,787	⁵ 244,599	387,263,755	61,085,000

¹ Does not include the employees of Western Electric Co., Inc.

² Information not reported for years 1884 to 1912, inclusive.

³ Does not include Long Lines employees.

⁴ Published figure, 14,517.

⁵ Does not include occasional employees and employees on leave of absence.

Source: Exhibit 1360-A, tables 9 and 29, pp. 56 and 115, respectively; and American Telephone & Telegraph Co. Comptroller's Annual Report, 1935, pt. I, statement No. 56.

⁶ Earnings of the Bell System and its constituent segments are discussed extensively in ch. 18.

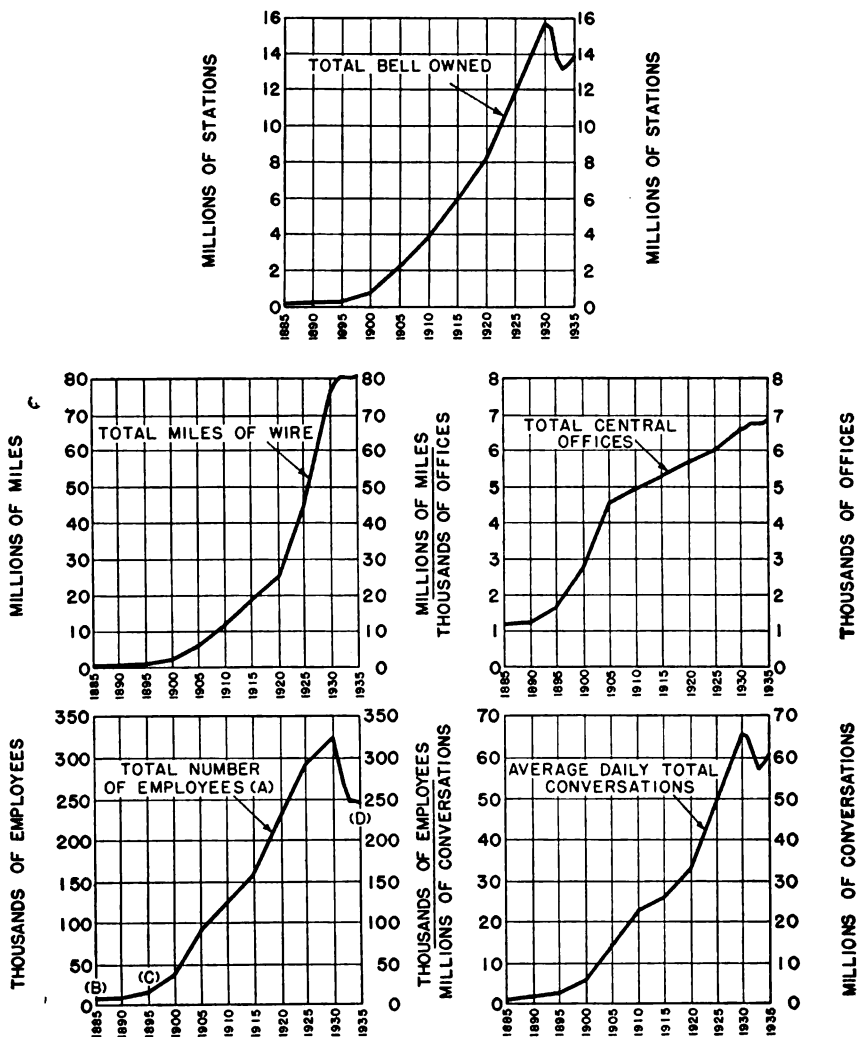
⁷ See table 32, p. 129, *infra*, for data on number of Bell and independent stations by years.

⁸ For a discussion of Bell-independent relations, see ch. 5.

CHART 4

GROWTH OF THE BELL SYSTEM AS REFLECTED BY PLANT AND OPERATING STATISTICS AT FIVE-YEAR INTERVALS*

AS OF DECEMBER 31, 1885 TO 1935, INCLUSIVE.



* EACH YEAR BETWEEN 1930 AND 1935 IS SHOWN.

(A) DOES NOT INCLUDE THE EMPLOYEES OF WESTERN ELECTRIC COMPANY, INCORPORATED.

(B) DOES NOT INCLUDE LONG LINES EMPLOYEES.

(C) PUBLISHED FIGURE, 14,517.

(D) FIGURES FOR THE YEARS 1933, 1934, AND 1935 DO NOT INCLUDE OCCASIONAL EMPLOYEES AND EMPLOYEES ON LEAVE OF ABSENCE.

The number of Bell-owned stations increased steadily from 1905 to 1930, each 5-year interval showing a larger increase in number of stations through 1925, until the total number of Bell-owned stations in 1930 reached 15,682,059. In addition, perhaps nearly 300,000 stations were owned by small telephone companies which were subsidiaries of associated companies by virtue of stock ownership. These stations are not reported by the system as Bell-owned stations. Thus, in 1930, the total number of Bell-controlled stations must have been nearly 16,000,000, in comparison with some 20,000,000 stations in the United States as a whole. From 1930 to 1933, there was a steady decline in the number of Bell-owned telephone stations, and since 1933 there has been a gradual increase. The reports, as of the end of 1937, indicate that all of the loss after 1930 in the number of Bell System stations in operation has been regained, and the peak of 1930 has been surpassed.

All the other indexes of Bell System growth have shown corresponding increases. Total wire mileage increased from 155,791 in 1885 to 76,000,000 in 1930 and 80,000,000 in 1932 which remained substantially unchanged at the end of 1935.⁹ Of this latter figure, 65,000,000 miles consisted of exchange wire and 15,000,000 of toll wire. The total number of Bell Telephone employees, including those of the American Co. and of the associated telephone companies, increased from 5,766 people in 1885 to a peak of 364,045 people at December 31, 1929.¹⁰ There were 324,343 people employed at the end of 1930. Five years later the number of employees had been reduced to 244,599. Even though for the 2 years, 1934 and 1935, the number of telephone stations in operation and average daily traffic increased gradually, the number of Bell Telephone employees showed a further decline over this same period. Bell Telephone System pay roll rose with the number of employees from \$99,454,000 in 1915 to \$534,468,000 in 1930, then declined to a low of \$356,287,000 in 1933 and increased to \$387,264,000 in 1935. Since 1935, there has been a slight increase both in number of employees and in the total pay roll, but this increase has not been commensurate with the statistics of telephone stations and traffic, which have come up practically to the 1929 and 1930 levels. The average daily total conversations, including toll conversations, reached a peak of 65,000,000 in 1930 and were 61,000,000 in 1935 after having reached a low of 57,246,000 in 1933. Since 1935 there has been a gradual increase in average daily total conversations. By the end of 1937 practically all of the lost ground had been regained, but employment and pay rolls had not shown a corresponding increase. At December 31, 1937, the number of Bell-owned stations was 15,728,823, an increase of 901,068 over 1936, and number of telephone employees was 272,172.¹¹ Among the principal reasons for the lag in employment are the fact that it has so far been unnecessary, in order to handle the increased business, to increase construction work to anywhere near the pre-depression level; and the continued change to the dial system method of operation.

⁹ See exhibit 1360-A, table 29, p. 115.

¹⁰ See table 7, p. 41, and American Telephone & Telegraph Co. Annual Report to Stockholders for 1929, p. 26.

¹¹ See American Telephone & Telegraph Co. Annual Report to Stockholders for 1937, p. 23. These data were adjusted to make them comparable with those in table 7, p. 41.

SECTION 2. GROWTH OF THE PARENT COMPANIES OF THE BELL SYSTEM

The preceding section dealt with the total assets of the Bell System on a consolidated basis, including the investments of the parent company in interests other than telephone companies, such as Western Electric Co. Plant and property figures pertained to the telephone business, including the long lines department of the American Co. The facts with respect to capitalization were also on a consolidated basis, representing the overall picture of the parent company and its associated telephone companies. A brief discussion of the major constituent parts of the Bell System, namely, the parent companies, associated telephone companies, and Western Electric Co. will give a better understanding of the progress of the principal subdivisions of the system. It will be found that the largest expansion has been occasioned by the growth of local operating companies, whereas the principal source of funds, as expressed in expansion of capital stock outstanding in the hands of the public, has taken place through the parent company which has undertaken to finance the requirements of the Bell System.

In this section, the facts pertaining to growth of the parent organization are presented upon the following basis: From 1881 to 1885, the figures pertain to American Bell Telephone Co.; from 1885 to 1900, they include the consolidated picture of American Bell Telephone Co. and American Telephone & Telegraph Co.; and from 1900 on, they include the facts pertaining to the latter company only.

The growth of the parent organization of the Bell System is presented in table 8, which gives total assets, investments, total plant and property, and current assets, by 5-year intervals, from 1881 to 1930, and for each year following to 1935.¹²

Total Assets

The total assets of the parent company have increased from a little over \$8,000,000¹³ in February 1881, to nearly \$3,000,000,000 at the end of 1935. The largest single asset of the parent organization has been in the form of investments. These investments have increased from \$1,196,638 at February 28, 1881, to \$2,322,556,055 at December 31, 1935.

The growth of parent company assets is explained principally by the acquisition of investment interest in telephone companies. A good start was made at the inception of the permanent licenses in 1881, in exchange for which franchise stock was obtained from licensees. In addition to franchise stock, equity ownership in licensees was increased by cash purchases of stock. The result is conspicuously shown by the increase in the investments of American Bell Telephone Co., from \$1,196,638 on February 28, 1881, to \$22,351,730 as of December 31, 1885 (table 9). In the next 5-year period, the increase in investments was little more than \$6,000,000. After the expiration of the patents in 1893-94, there was a great advance in the exploitation of territories under the impetus of competition by independent telephone companies. Acquisition of increasing stock interest in licensees, rapid expansion of telephone service, and construction of long distance facilities explain the increase in parent company total assets, which include also those of the long distance company, from \$24,600,000 in

¹² See exhibit 1360-B, schedules 1 and 2, for these data for each year back to 1881.

¹³ This figure includes \$6,996,302 for patents. If this amount is deducted, other assets would be \$2,124,700.

1885 to \$100,000,000 in 1900. At the same time, a policy of acquiring independents was instituted. Under these conditions total assets of the parent company increased from \$100,000,000 in 1900 to \$490,000,000 in 1910. By far the largest part of this increase was in investments which jumped from \$73,700,000 to \$411,300,000 during the same period. Property, telephone equipment, and patents showed comparatively slow growth, increasing from \$21,700,000 to \$58,900,000.

TABLE 8.—*Classification of the parent company's assets as of Feb. 28, 1881, and as of Dec. 31, 1885 to 1930, inclusive, at 5-year intervals, and as of Dec. 31, 1931 to 1935, inclusive*

As of Dec. 31	Total assets	Investments	Property, telephone plant, equipment, and patents ¹	Cash, deposits, and marketable securities	Other assets and deferred debts
(a)	(b)	(c)	(d)	(e)	(f)
1881 ¹	\$3,121,062	\$1,196,638	\$1,569,286	\$100,753	\$254,385
1885	24,597,220	22,351,730	852,579	1,002,191	390,720
1890	36,846,837	28,492,753	5,892,481	216,059	2,244,544
1895	53,086,414	34,487,194	14,187,044	1,407,583	3,004,593
1900	100,124,583	73,738,824	21,714,012	1,078,072	3,593,676
1905	219,191,802	191,575,560	45,781,870	6,452,310	5,882,062
1910	490,215,377	411,310,533	58,877,134	13,109,340	6,918,370
1915	622,963,994	514,693,517	65,859,593	29,870,555	12,640,329
1920	953,319,498	796,024,244	122,784,549	26,636,390	9,874,845
1925	1,646,940,374	1,364,283,971	194,677,465	72,484,921	14,489,017
1930	3,162,926,191	2,318,380,022	431,697,698	388,857,763	23,990,738
1931	3,204,646,347	2,475,900,297	455,004,729	254,467,862	19,273,459
1932	3,112,567,504	2,474,733,603	443,325,677	170,638,344	23,869,890
1933	3,078,568,666	2,423,440,623	443,240,046	186,644,757	23,243,240
1934	3,034,636,813	2,376,160,962	441,964,054	199,178,557	23,333,240
1935	2,995,761,879	2,322,556,055	436,344,242	212,575,844	24,275,738

¹ As of Feb. 28, 1881.

² Includes a balance of \$5,996,302 in the patents account which was written up \$5,184,519 over the amount shown on the books of the predecessor company, National Bell Telephone Co.

³ In the years 1890, 1895, 1900, and 1905 very small amounts are included in the telephone plant accounts representing patents. After 1907 no amounts are included in the accounts of the parent company representing patents.

Source: Exhibit 1260-B, table 123, p. 518, and schedule 2.

Rapid growth in telephone service of associated companies, requiring immense amounts of capital for construction of new plant, acquisition of independent telephone companies, and extension of long distance telephone service, explain the growth of total assets, investments, and plant and property since 1910. These were financed principally by advances and investment in common stock of the associated companies by the American Co. During the period 1910-20, total assets progressed to \$955,000,000, whereas investments increased to \$796,000,000. During this decade, which includes the introduction of the vacuum-tube amplifier and the extension of long distance telephony to encompass the whole continental United States from coast to coast, the long lines telephone property of the American Co. showed marked increase.

During the period after 1920, the introduction of telephone plant changed in character and cost, as expressed by the increase in average telephone plant of the associated companies per average station from \$172 in 1924 to \$279 in 1935,¹⁴ and the enormous increase in demand for telephone service were important forces boosting the financial requirements of the Bell System, which were supplied principally by the American Co. This explains the increase in total assets of the American Co. from \$955,000,000 in 1920 to \$3,163,000,000 in 1930. The funds acquired by this expansion in capitalization were used

¹⁴ See exhibit 1264, schedule E-3.

principally to acquire investments which increased from \$796,000,000 in 1920 to \$2,318,000,000 in 1930, and to provide for the extension of its own plant, principally long distance property, from \$123,000,000 in 1920 to \$432,000,000 in 1930.

Investments.

An analysis of the investments of the American Co. indicates that common stocks is the largest single item, and "notes, advances, and open accounts" the next substantial element. This is shown in table 9. In 1881, all but a small part of the investments was in common stocks. In 1935, \$2,129,000,000 out of \$2,322,000,000 of investments was in common stocks. Investment in preferred stocks amounted to \$56,000,000; bonds and mortgages were recorded at \$13,000,000; and notes, advances, and open accounts at \$124,000,000.

TABLE 9.—*Classification of the parent company's investments as of Feb. 28, 1881, and as of Dec. 31, 1885 to 1930, inclusive, at 5-year intervals, and as of Dec. 31, 1931 to 1935, inclusive*

As of December 31 (a)	Total (b)	Common stocks (c)	Preferred stocks (d)	Bonds and mortgages (e)	Notes, ad- vances, and open ac- counts (f)
1881 ¹	\$1,196,638	\$1,036,859	-----	-----	² \$159,779
1885.....	22,351,730	22,351,730	-----	-----	-----
1890.....	28,492,753	28,492,753	-----	-----	-----
1895.....	34,487,194	34,487,194	-----	-----	-----
1900.....	73,738,824	69,782,246	-----	\$1,937,078	2,019,500
1905.....	191,575,560	145,943,634	\$13,101,450	2,974,578	29,555,898
1910.....	411,310,533	341,541,338	15,121,000	2,885,000	51,763,195
1915.....	514,693,517	399,927,765	39,448,602	4,007,570	71,309,580
1920.....	796,024,244	554,664,547	27,771,465	27,914,479	185,673,753
1925.....	1,364,288,971	1,033,159,189	74,718,287	6,417,671	249,963,824
1930.....	2,318,380,022	1,874,255,591	72,499,991	8,255,000	363,369,440
1931.....	2,475,900,297	2,051,801,699	56,324,111	13,936,044	355,838,443
1932.....	2,474,733,603	2,055,195,447	56,370,179	13,133,880	350,034,097
1933.....	2,423,440,623	2,105,775,892	56,370,179	13,100,000	248,195,052
1934.....	2,370,160,962	2,125,980,902	56,339,179	13,100,000	174,740,881
1935.....	2,322,556,055	2,129,022,112	56,339,179	13,100,000	124,094,764

¹ As of Feb. 28, 1881.

² Represents amount receivable from Union Telephone Co. (Illinois) for construction advances of \$109,779 and charge of \$50,000 for license subsequently applied in connection with acquisition of capital stock of Chicago Telephone Co.

Source: Exhibit 1360-B, table 124, p. 521, and schedule 2.

A further analysis of common stocks investment as of the end of 1935 shows that \$1,959,000,000 out of \$2,129,000,000, or 92 percent of the American Co.'s investment in common stocks, was in the stocks of associated Bell Telephone companies. This is apparent in table 10. This preponderance of associated company stocks among the investments of the Bell parent companies has been a fact all through the system's history since the early eighteen eighties. A large portion of preferred stocks, notes, advances, and open accounts were also those of associated companies.

At December 31, 1935, 77.53 percent of the \$2,995,751,879 of total assets of the parent company was represented by investments, and only 14.57 percent by property, telephone plant and equipment, and patents.¹⁵ At the same time the American Co.'s investment in associated Bell Telephone companies amounted to \$2,131,000,000, out of total investments of \$2,322,000,000. To put it otherwise, 91.77 percent of total investments was in associated Bell Telephone companies, consisting principally of their common stocks and, to a much

¹⁵ See exhibit 1360-B, table 123, p. 518.

lesser extent, of notes, advances, and open accounts. The investment in associated companies represented 71 percent of American Co.'s total assets.

Plant and Property.

The plant and property of the parent organization consists principally of long distance telephone facilities, and up to 1927 included also the telephone instruments owned by the parent organization. By and large, the growth of the American Co.'s plant and property account is represented by expansion of long lines plant. As shown in table 11, from 1890 to 1925, long lines plant and equipment increased from \$4,000,000 to \$152,000,000; whereas, the recorded amount for telephone instruments grew from \$900,000 to \$41,000,000. The telephone instruments were sold to the associated companies as of December 31, 1927.¹⁶ From 1925 to 1930, the long lines plant expanded almost threefold, to \$430,000,000 in 1930. At the end of 1937 it was \$438,000,000.¹⁷

TABLE 10.—*Classification of the parent company's investments in common stocks as of Dec. 31, 1885 to 1930, inclusive, at 5-year intervals, and as of Dec. 31, 1931 to 1935, inclusive*

CLASSIFICATION BY AMOUNTS

As of Dec. 31— (a)	Total (b)	Associated Bell Telephone companies (c)	Western Elec- tric Co., Inc., and predecessor (d)	The Bell Tele- phone Co. of Canada (e)	Other asso- ciated and miscellaneous companies (f)
1885.....	\$22,351,730	\$21,235,055	\$528,000	\$587,500	\$1,175
1890.....	28,492,753	26,714,031	1,064,135	714,412	175
1895.....	34,487,194	31,416,384	1,836,135	1,234,500	175
1900.....	60,782,246	61,587,556	5,382,295	2,812,095	300
1905.....	145,943,634	131,217,619	8,385,895	4,548,195	1,791,925
1910.....	341,541,338	291,402,878	18,170,100	6,510,240	125,458,620
1915.....	390,927,765	377,401,504	11,432,821	8,632,140	2,461,300
1920.....	554,664,547	496,526,631	41,158,725	10,302,566	3,677,625
1925.....	1,033,159,189	953,270,343	56,047,523	16,988,499	6,852,834
1930.....	1,874,255,581	1,705,933,703	142,802,105	18,854,783	6,665,000
1931.....	2,051,801,690	1,883,317,311	142,802,105	18,854,783	6,827,500
1932.....	2,055,195,447	1,886,219,008	143,294,156	18,854,783	6,827,500
1933.....	2,105,775,362	1,936,246,608	143,845,076	18,854,783	6,829,025
1934.....	2,125,980,902	1,956,451,483	143,845,611	18,854,783	6,829,025
1935.....	2,129,022,112	1,959,145,950	144,192,338	18,854,783	6,829,041

CLASSIFICATION BY PERCENTAGES OF TOTAL

1885.....	100	95.00	2.36	2.63	0.01
1890.....	100	93.76	3.73	2.51	-----
1895.....	100	91.10	5.32	3.58	-----
1900.....	100	88.26	7.71	4.03	-----
1905.....	100	89.91	5.75	3.11	1.23
1910.....	100	85.32	5.32	1.91	7.45
1915.....	100	94.37	2.86	2.16	.61
1920.....	100	90.06	7.42	1.86	.66
1925.....	100	92.27	5.42	1.65	.66
1930.....	100	91.02	7.62	1.01	.35
1931.....	100	91.70	6.96	.92	.33
1932.....	100	91.78	6.97	.92	.33
1933.....	100	91.95	6.83	.90	.32
1934.....	100	92.02	6.77	.89	.32
1935.....	100	92.02	6.77	.89	.32

¹ Includes \$1,281,140, representing a controlling interest in Western Telephone & Telegraph Co., which held a controlling interest in the following associated Bell Telephone companies: The Cleveland Telephone Co., Wisconsin Telephone Co., The Northwestern Telephone Exchange Co., and The Southwestern Telephone & Telegraph Co.

² Includes \$25,208,620, representing investment in \$29,657,200, par value of common stock of the Western Union Telegraph Co. which was disposed of in 1914 in accordance with an arrangement with the Attorney General of the United States to avoid conflict with the Federal antitrust laws.

Source: Exhibit 1360-B, table 126, p. 524, and schedules 6, 8, 9, and 10.

¹⁶ This sale is discussed, *infra*, at p. 151.

¹⁷ See American Telephone & Telegraph Co., Annual Report to Stockholders for 1937, p. 24.

Liabilities.¹⁸

The total stated liabilities of the parent company of the Bell System have, of course, kept pace with the total assets. The principal item on the liabilities side of the balance sheet has been common stock, premiums and installments received on subscriptions to common stock. This item increased from \$5,950,000 at February 28, 1881, to \$2,139,000,000 at December 31, 1935. This appears in table 12. Of the latter figure, \$1,865,000,000 represented par value of common stock, as shown in table 13. Long-term debt has also increased enormously from the earlier date, when it was only \$296,000, to \$443,000,000 at the end of 1935. Reserves for depreciation, contingencies, and surplus also showed corresponding increase. On a percentage basis it is of interest to note that common stock has constituted by far the most substantial source of capital, whereas the proportion of long-term debt, as in the case of the system, as a whole, has not usually gone over 33 percent of total liabilities, but has been more often at less than 25 percent.¹⁹

As common stock of the parent company has been the main source of capital and the largest item on the liabilities side of the balance sheet, it is of interest to note the expansion of this item during the period of the existence of the American Bell and American Telephone & Telegraph Cos., as shown in table 13. The common stock of both companies was represented by shares having par value of \$100 each.

TABLE 11.—Classification of the parent company's property, telephone plant, equipment, and patents as of Dec. 31, 1885 to 1930, inclusive, at 5-year intervals, and as of Dec. 31, 1931 to 1935, inclusive

As of Dec. 31—	Total	Long lines telephone plant and equipment	Telephone instruments	Land and buildings	Miscella- neous
(a)	(b)	(c)	(d)	(e)	(f)
1885.....	\$852,579	\$261,857	\$590,722	-----	-----
1890.....	5,892,481	4,224,023	919,275	\$744,333	¹ \$4,850
1895.....	14,187,044	9,346,571	1,285,946	1,045,927	² 2,508,600
1900.....	21,714,012	15,810,963	4,311,929	1,567,019	¹ 24,101
1905.....	45,781,870	34,453,471	8,507,145	2,577,870	¹ 243,384
1910.....	58,877,134	45,123,438	11,568,966	2,184,730	-----
1915.....	65,859,593	50,052,191	15,299,001	508,401	-----
1920.....	122,784,549	94,697,128	23,876,521	3,775,408	435,492
1925.....	194,677,465	152,404,677	41,229,476	2,762	1,040,550
1930.....	431,697,668	430,137,629	-----	3,017	1,557,022
1931.....	455,004,729	453,431,698	-----	6,217	1,566,814
1932.....	443,325,677	441,774,675	-----	6,217	1,544,785
1933.....	443,240,046	441,703,164	-----	3,200	1,533,682
1934.....	441,964,054	440,877,139	-----	3,200	1,083,715
1935.....	436,344,242	435,267,312	-----	3,200	1,073,730

¹ Represents balance in patents account.

² Includes \$8,600 for patents and \$2,500,000 carried on the books as franchise, representing par value of capital stock of American Telephone & Telegraph Co. issued to American Bell Telephone Co. for license, which was written off against reserve for contingencies in 1900.

Source: Exhibit 1360-B, table 128, p. 530, and schedule 22.

The par value of capital stock outstanding of American Bell stood at \$5,950,000 on February 28, 1881. By the end of 1899, the par value of outstanding shares had reached \$25,886,300. As a result of the two-for-one exchange of American Co. stock for American Bell stock, this figure was doubled as of the beginning of 1900. By the end of 1900, the par value of outstanding stock of the American Co. was

¹⁸ See footnote 4, p. 39.

¹⁹ See exhibit 1360-B, schedules 1 and 2.

recorded at \$56,990,100, not including 321,104 shares of treasury stock held by American Bell. By the end of 1935, this had increased to \$1,866,227,500. During the same period, the number of stockholders increased tremendously. In 1881, there were 540 stockholders. By 1899, this had increased to 6,863; by 1930, it had increased to 492,760; by 1935, there were 675,755 stockholders. The number of stockholders reached a peak of over 700,000 at the end of 1932. Since then there has been a decline in the number of stockholders of record. The number at the end of 1937 was 641,686.²⁰

Revenues.

Concurrently with the increase of total assets, there has been a gradual yet steady increase in the revenues of American Telephone & Telegraph Co. and its predecessor, American Bell Telephone Co. For the 10-month period ended February 28, 1881, total revenues of American Bell were \$421,000. In 1885, the revenues were \$2,270,000. Five years later they were \$4,000,000. In 1900, total revenues amounted to \$9,500,000. Ten years later the total revenues were more than quadrupled, to \$40,700,000. Between 1920 and 1930, total revenues nearly trebled, from \$105,000,000 in 1920 to \$294,000,000 in 1930. From 1931 to 1934 there was a decrease in revenues, but the trend has been upward again since 1935. In that year the total revenues were \$230,000,000. A comparative statement of revenues for each year since 1881 is found elsewhere.²¹ A statement of revenues at 5-year intervals is given in table 14.

The growth in total revenues of the parent organization was, of course, affected by all the factors already enumerated in connection with the growth of assets. In addition, there were certain conditions bearing specifically on revenues that need to be mentioned. Until the expiration of the Bell patents, the rental on telephone instruments was high, and the principal revenue of the parent company consisted of license fees or rentals on telephone instruments. The reduction of instrument rentals after the expiration of the patents, and the increasing stock interest which the parent company was taking in licensees, made dividend income, particularly after 1893-94, a more important source of revenue. With the continued increase in the stock interest of the American Co. in licensees,²² this item, of course, has become the most important source of revenue, accounting for more than 50 percent of the total revenues, including those of long lines, and between 75 and 80 percent of the general department's revenues. The long lines revenues have shown a steady and continuous growth, particularly in the decade from 1920 to 1930. From 1930 to 1933, there was a decline, but the upward movement has been resumed since 1934. License fees, of course, have varied both with the changes in gross telephone operating revenues of the system, and with the changes in the rate charged, which declined from 4½ percent in 1925 to 1½ percent in 1929, the major reduction taking place on January 1, 1928, following the sale of telephone instruments by the American Co. to the associated companies.

²⁰ See American Telephone & Telegraph Co., Annual Reports to Stockholders for 1932 and 1937, pp. 20 and 22, respectively, for number of stock holders at the end of those years.

²¹ See exhibit 1360-B, schedules 41 and 42.

²² See *supra*, table 3, p. 21.

TABLE 12.—*Classification of the parent company's liabilities as of Feb. 28, 1881, and as of Dec. 31, 1885, to 1930, inclusive, at 5-year intervals, and as of Dec. 31, 1931, to 1935, inclusive*

CLASSIFICATION BY AMOUNTS					
Date	Total	Common stock, premiums, and installments received on subscriptions	Long-term debt	Other liabilities, deferred credits, and miscellaneous reserves	Reserves for depreciation and contingencies, and surplus
(a)	(b)	(c)	(d)	(e)	(f)
1881 ¹	\$3,121,062	\$5,950,000	\$296,100	\$244,248	\$1,630,714
1885.....	24,597,220	9,989,463	-----	638,474	13,969,283
1890.....	36,845,837	13,206,077	2,000,000	1,578,062	20,061,698
1895.....	53,086,414	25,002,947	2,000,000	2,882,980	23,200,487
1900.....	100,124,583	57,154,650	20,000,000	4,410,893	18,559,040
1905.....	249,191,802	131,681,941	78,000,000	7,281,579	32,328,282
1910.....	490,215,377	291,299,632	116,141,000	21,204,025	61,570,720
1915.....	622,963,994	423,504,661	120,182,700	19,042,274	60,234,359
1920.....	955,319,498	490,823,496	317,429,000	40,499,985	106,567,017
1925.....	1,645,940,374	1,004,054,619	387,692,600	58,666,525	195,526,630
1930.....	3,162,926,191	2,166,245,839	462,615,700	88,884,089	445,180,563
1931.....	3,204,646,347	2,206,743,960	458,300,900	85,013,921	454,587,566
1932.....	3,112,567,504	2,148,743,165	447,335,400	84,159,855	432,329,084
1933.....	3,078,568,666	2,147,381,759	445,056,400	72,143,218	413,987,289
1934.....	3,034,636,813	2,144,055,390	444,294,500	68,323,073	377,963,850
1935.....	2,995,751,879	2,139,306,915	443,532,600	69,468,101	343,444,263

CLASSIFICATION BY PERCENTAGES OF THE TOTAL

1881 ¹	100	73.27	3.64	3.01	20.06
1885.....	100	40.62	-----	2.59	56.79
1890.....	100	35.84	5.43	4.28	54.45
1895.....	100	47.10	3.77	5.43	43.70
1900.....	100	57.08	19.98	4.41	18.53
1905.....	100	52.80	31.30	2.93	12.97
1910.....	100	59.42	23.69	4.33	12.56
1915.....	100	67.98	19.29	3.06	9.67
1920.....	100	51.38	33.23	4.24	11.15
1925.....	100	61.00	23.56	3.56	11.88
1930.....	100	68.49	14.63	2.81	14.07
1931.....	100	68.86	14.30	2.65	14.19
1932.....	100	69.04	14.37	2.70	13.89
1933.....	100	69.75	14.46	2.34	13.45
1934.....	100	70.65	14.64	2.25	12.46
1935.....	100	71.41	14.81	2.32	11.46

¹ As of Feb. 28, 1881.

Source: Exhibit 1360-B, table 131, p. 536, and schedule 2.

TABLE 13.—*Capital stock outstanding and number of stockholders of American Bell Telephone Co. and American Telephone & Telegraph Co., years 1881 to 1930, inclusive, at 5-year intervals, and years 1931 to 1935, inclusive*

AMERICAN BELL TELEPHONE CO.					
Year	Par value outstanding at end of year	Number of stockholders ¹	Year	Par value outstanding at end of year	Number of stockholders ¹
(a)	(b)	(c)	(a)	(b)	(c)
1881.....	¹ \$5,950,000	540	1895.....	\$21,500,000	5,572
1885.....	9,697,100	1,607	1899.....	25,886,300	6,863
1890.....	12,500,000	2,734			
AMERICAN TELEPHONE & TELEGRAPH CO.					
1900.....	² \$56,990,100	6,961	1930.....	\$1,795,651,200	492,766
1905.....	131,551,400	17,055	1931.....	1,865,836,100	581,268
1910.....	283,335,600	37,594	1932.....	1,866,227,500	667,238
1915.....	380,477,100	61,512	1933.....	1,866,227,500	700,616
1920.....	442,825,400	124,172	1934.....	1,866,227,500	678,616
1925.....	921,697,500	349,191	1935.....	1,866,227,500	678,755

¹ As of Feb. 28, 1881.² Figures are as of nearest available record date to annual meetings.³ Does not include 321,104 shares originally issued to American Bell Telephone Co., which became treasury stock as a result of the consolidation consummated during 1900, as of Dec. 30, 1899.

Source: Exhibit 1360-B, schedules 26-A and 27-A; and exhibit 2096-A, schedule 6, and appendix 2, sheet 5.

TABLE 14.—*Classification of the parent company's revenues for the period ended Feb. 28, 1881, the years 1885 to 1930, inclusive, at 5-year intervals, and the years 1931 to 1935, inclusive*

AMERICAN BELL TELEPHONE CO.

Year ended Dec. 31— (a)	Total revenues (b)	General department					Long lines depart- ment (h)
		Dividends (c)	Interest (d)	License fees (e)	Miscella- neous (f)	Total (g)	
1881 ¹	\$421,005	\$11,200	\$4,332	\$378,663	\$26,810	\$421,005	-----
1885.....	2,270,438	597,470	39,813	1,530,951	102,204	2,270,438	-----

AMERICAN TELEPHONE & TELEGRAPH CO. AND AMERICAN BELL TELEPHONE CO.

1890.....	\$4,029,414	\$1,306,381	\$77,447	\$2,109,575	\$128,200	\$3,621,603	\$407,811
1895.....	5,147,436	2,199,461	215,320	1,179,566	223,671	3,818,018	1,329,418

AMERICAN TELEPHONE & TELEGRAPH CO.

1900.....	\$9,534,499	\$3,846,822	\$201,643	\$2,427,037	\$31,825	\$6,507,327	\$3,027,172
1905.....	21,712,831	8,737,952	2,445,290	3,896,151	82,384	15,161,777	6,551,054
1910.....	40,710,200	19,265,494	4,460,106	6,687,522	111,693	30,464,815	10,245,395
1915.....	54,780,796	25,062,016	5,007,561	10,020,182	31,597	40,721,956	14,053,840
1920.....	105,236,021	34,800,466	12,712,318	18,979,158	128,871	66,620,813	38,675,208
1925.....	181,650,656	75,396,527	17,646,830	31,965,628	668,298	125,676,283	55,974,378
1930.....	293,637,256	148,178,886	26,301,163	16,511,139	1,164,080	192,156,268	101,501,968
1931.....	289,437,228	150,135,883	24,759,741	16,135,455	1,196,596	192,227,675	97,209,553
1932.....	263,986,095	137,379,816	24,296,364	14,475,237	767,644	176,919,061	77,067,084
1933.....	237,713,764	127,913,090	20,076,327	13,059,550	493,840	161,542,807	76,170,957
1934.....	222,844,154	115,409,048	15,113,022	12,957,975	869,290	144,349,335	73,494,819
1935.....	229,739,970	121,244,200	11,243,204	13,819,198	1,070,467	147,377,069	82,362,901

¹ 10-month period ended Feb. 28, 1881.

Source: Exhibit 1360-B, schedules 41 and 42.

SECTION 3. GROWTH OF ASSOCIATED BELL TELEPHONE COMPANIES

It was indicated in the preceding section that the largest interest of the American Telephone & Telegraph Co., representing 71 percent of its total assets, is in the form of investments in associated companies, which render local exchange and toll telephone service throughout the United States. Whereas the American Co. controls the associated companies, and supplies them with capital obtained by the issue of its own securities to the public as represented by the enormous growth in its capitalization, the larger part of the telephone property is owned and operated by the associated companies, and, therefore, the growth of the Bell System as a whole is mainly a manifestation of the expansion in the business of the associated companies. A brief view of various accounts and statistics pertaining to associated companies will make this clear.

Total Assets and Telephone Plant.

In recent years over 75 percent of the total assets and over 90 percent of the total telephone plant and equipment in the Bell System, have been represented by the assets and plant, respectively, of the associated Bell Telephone companies. This is apparent from a comparison of table 15 with table 5. The total assets of the associated companies at December 31, 1885, were over \$54,000,000. Fifty years later, total assets were \$4,196,000,000. Telephone plant and

equipment has always been the most important asset of the associated companies. This item was \$34,000,000 at the end of 1885, and 50 years later it was over \$3,828,000,000.

The growth has been steady, but the greatest expansion took place between 1920 and 1930, when total assets grew from \$1,474,000,000 to almost \$4,000,000,000, and telephone plant and equipment expanded from \$1,264,000,000 to \$3,690,000,000. This was due partly to the growth in telephone service, as indicated by the number of Bell-owned stations (excluding long lines) which increased from 8,333,648 at the end of 1920 to 15,675,234 ten years later, and partly by the fact that Bell plant changed in character and cost as reflected in the recorded investment per station, which rose from approximately \$153 to \$219.

TABLE 15.—*Growth of the Associated Bell Telephone companies as reflected in their principal balance-sheet data as of Dec. 31, 1885 to 1930, inclusive, at 5-year intervals, and as of Dec. 31, 1931 to 1935, inclusive*

As of Dec. 31—	Total assets	Telephone plant and equipment †	Capital stock ‡	Funded debt	Fixed capital reserves ‡	Surplus ‡
(a)	(b)	(c)	(d)	(e)	(f)	(g)
1885.....	\$54,450,537	\$34,066,102	\$46,736,355	\$367,409	-----	\$5,658,580
1890.....	76,851,565	53,555,610	58,659,621	4,473,280	-----	8,328,532
1895.....	101,602,885	70,077,644	67,236,768	8,124,067	-----	18,786,381
1900.....	208,345,131	155,531,438	142,483,541	26,127,731	-----	16,478,456
1905.....	400,311,052	319,329,842	257,954,436	27,711,962	-----	32,623,271
1910.....	651,229,882	557,363,522	378,518,378	118,509,250	\$46,526,626	36,054,264
1915.....	935,717,396	823,553,823	436,809,977	234,038,014	128,199,907	40,991,964
1920.....	1,473,968,308	1,263,758,063	570,660,192	304,319,675	281,744,199	62,639,716
1925.....	2,623,339,679	2,374,914,965	1,184,839,997	504,568,895	484,783,901	96,109,432
1930.....	3,998,314,061	3,690,508,423	1,968,141,347	571,196,727	681,859,226	234,583,887
1931.....	4,130,241,881	3,813,601,422	2,116,311,300	498,955,925	724,156,807	234,276,873
1932.....	4,115,912,971	3,813,026,708	2,116,311,400	483,352,409	755,880,968	210,457,663
1933.....	4,096,152,040	3,795,406,285	2,166,311,400	479,579,380	815,237,263	174,112,855
1934.....	4,121,625,806	3,804,229,170	2,197,044,448	477,799,895	880,852,333	157,715,691
1935.....	* 4,196,330,872	3,828,336,584	2,199,045,323	* 510,058,825	966,609,567	152,092,982

† Includes construction work in progress, but does not include intangible capital.

‡ Includes capital-stock installment payments and capital-stock premium when available.

§ Comparable information not available prior to 1907.

* Includes reserves prior to 1900.

† Includes \$44,000,000 of bonds issued by Southwestern Bell Telephone Co., the proceeds from which were to be applied to payment of other bonds called for redemption on Feb. 1, 1936, the latter also being included in this total.

* Includes \$44,000,000 deposited for payment of bonds called for redemption as of Feb. 1, 1936.

NOTE.—Some intercompany duplications for the early years may not have been eliminated.

Source: Exhibit 1360-A, table 13, p. 66; and exhibit 1364, schedule A-1.

Construction work was radically curtailed after 1930, reflecting adverse business conditions which resulted in the loss of slightly over 2,500,000 stations in service by the end of 1933. Although demand for service increased steadily from the low point of 1933, still at the end of 1935 there were only 13,922,702 company-owned stations in service. In the light of these conditions, it is not surprising that following the large increases in total assets and telephone plant during the 1920's, the rate of growth should decline so that by the end of 1935, total assets were more than 1930 by only \$198,000,000, and telephone plant and equipment by \$138,000,000. In spite of this insignificant growth in comparison with the preceding era, the investment in telephone plant per station increased principally because of the reduction in the number of telephones in service, from \$219 to \$279.²³

²³ See exhibit 1364, schedule E-3.

Liabilities.

The associated companies have a capital structure consisting principally of capital stock, a characteristic which differentiates the Bell System from other types of operating utilities. The growth of associated companies' business as measured by the expansion of assets has been accompanied by a corresponding increase in capital stock, most of which was taken by the parent company of the Bell System in conversion of advances.²⁴ The combined capital stock of associated companies increased from \$46,700,000 in 1885 to \$2,199,000,000 in 1935, the greatest expansion taking place between 1920 and 1930, when capital stock grew from \$571,000,000 to \$1,968,000,000.²⁵

The funded debt of associated companies expanded considerably with the years along with that of the system as a whole but never exceeded 27 percent²⁶ of total assets or liabilities. The funded debt expanded from \$367,400 in 1885, and \$4,473,280 in 1890, to \$571,000,000 in 1930, and declined to \$510,000,000 in 1935. At the latter date funded debt was nearly 12 percent of total liabilities.

Another item of liability, fixed capital reserves, came into prominence in the accounts of the associated companies after 1907, when fairly uniform methods of depreciation accounting were adopted. The fixed capital reserves of the associated companies increased from \$46,526,626 in 1910, to \$966,000,000 in 1935. The growth of fixed capital reserves, consisting principally of depreciation reserves, has more than kept pace with the expansion of plant. From 1920 to 1925, these reserves increased from nearly \$282,000,000 to \$485,000,000, or by approximately \$203,000,000. The increase was commensurate in the next 5-year period. In 1930 they reached the sum of nearly \$682,000,000, or about \$197,000,000 more than in 1925, and \$400,000,000 more than in 1920. During the interval 1920 to 1930, it will be recalled that telephone plant of the associated companies increased by \$2,427,000,000. The growth in reserves during the same decade was, therefore, better than 16 percent of the accretion in plant. From 1930 to 1935, however, whereas plant and equipment expanded only by \$138,000,000, fixed capital reserves increased from \$682,000,000 to \$967,000,000, or by \$285,000,000, due, of course, to their accumulation through annual expense charges amounting to a fairly definite percentage of plant already expanded by an enormous construction program which culminated in 1930-31.²⁷ As a result, the percentage of reserves to total liabilities increased from 17 percent in 1930 to 23 percent in 1935. As applied to plant and equipment, the percentage varied from a little over 18 percent in 1930 to more than 25 percent in 1935. The fixed capital reserves of the Bell System, at December 31, 1935, were \$1,061,650,114.²⁸ Thus, associated company fixed capital reserves represent the larger portion of similar reserves for the system as a whole, principally because the parent company's comparable reserves are applicable mainly to its long lines properties, which measure a little over 10 percent of the total Bell System telephone plant.

On the other hand, the surpluses of the associated companies do not bulk large even though these companies are the principal source of

²⁴ See *infra*, table 63, p. 426.

²⁵ Figures include capital-stock installments and premiums. See table 15, p. 52.

²⁶ This percentage was 26.21 at the end of 1914. See exhibit 1360-A, table 40, p. 140.

²⁷ See exhibit 1364, schedule G-4, for depreciation rates.

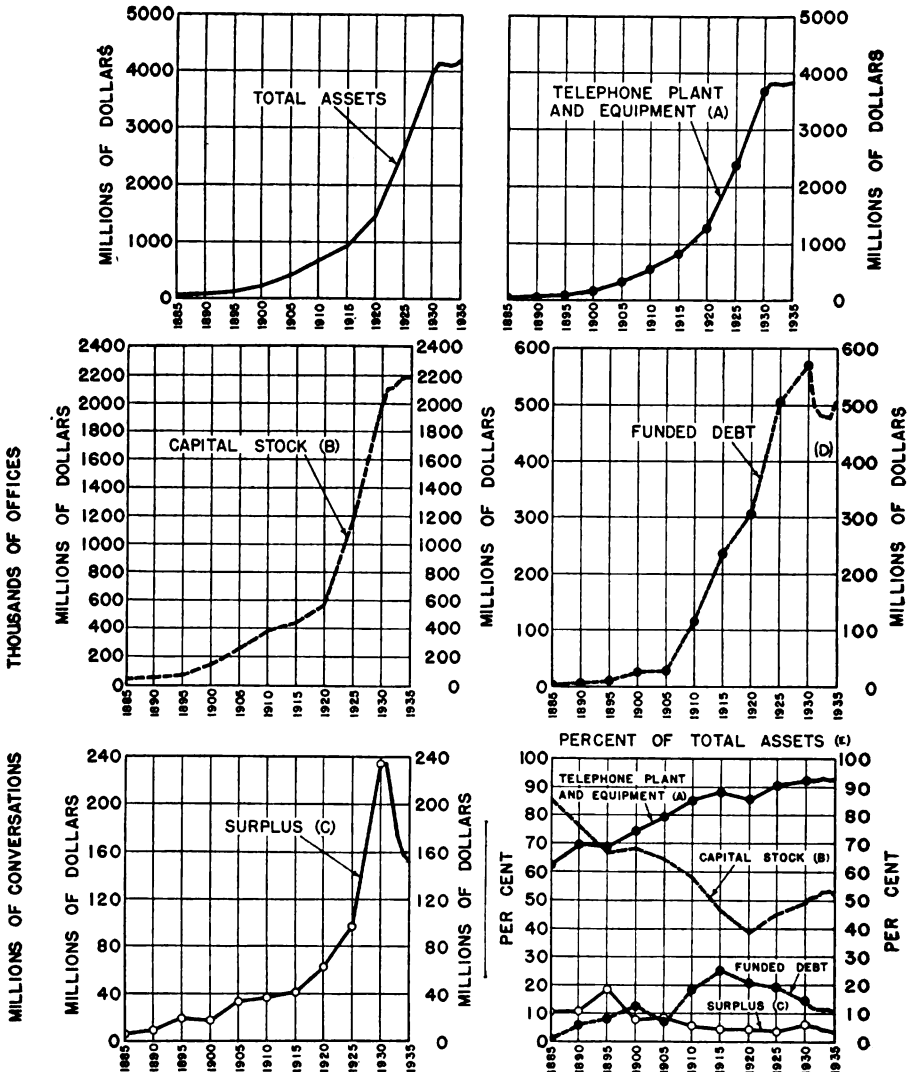
²⁸ See *infra*, table 22, p. 71.

CHART 5

ASSOCIATED BELL TELEPHONE COMPANIES

PRINCIPAL BALANCE SHEET DATA
AND RELATIVE SIZE OF SUCH DATA
AT FIVE-YEAR INTERVALS *

AS OF DECEMBER 31, 1885 TO 1935, INCLUSIVE



* EACH YEAR BETWEEN 1930 AND 1935 IS SHOWN.

(A) INCLUDES CONSTRUCTION WORK IN PROGRESS.
(B) INCLUDES CAPITAL STOCK INSTALLMENT PAYMENTS AND CAPITAL STOCK PREMIUM WHEN AVAILABLE.

(C) INCLUDES RESERVE PRIOR TO 1900.

(D) INCLUDES \$44,000,000 BONDS, ISSUED BY SOUTHWESTERN BELL TELEPHONE COMPANY, THE PROCEEDS FROM WHICH WERE TO BE APPLIED TO PAYMENT OF OTHER BONDS CALLED FOR REDEMPTION ON FEB. 1, 1936. THE LATTER ALSO BEING INCLUDED IN THIS TOTAL.

(E) 1935 PERCENTS ARE ON THE BASIS OF EXCLUDING THE \$44,000,000 MENTIONED IN NOTE (D) FROM BOTH TOTAL ASSETS AND FUNDED DEBT.

NOTE: SOME INTERCOMPANY DUPLICATIONS FOR THE EARLY YEARS MAY NOT HAVE BEEN ELIMINATED.

revenues in the Bell System. Surplus and reserves were \$5,600,000 in 1885, and in 1910, when reserves were segregated, surplus amounted to \$36,000,000. In 1930 the surplus had risen to \$234,000,000, and in 1935 it had declined to \$152,000,000. The parent company of the system had larger surpluses than these. The reason, of course, was that the associated companies have followed the policy, dictated by the parent company, of paying out most of their net earnings in dividends to the parent company.

Revenues.

Associated companies' telephone operating revenues increased from \$9,600,000 in 1885 to \$1,019,000,000 in 1930. The greatest expansion in telephone operating revenues took place in the decade 1920-30, when they increased by more than \$600,000,000, from \$412,000,000 in 1920 to \$1,019,000,000 in 1930. Then they receded to \$821,000,000 in 1933. Since 1933 total telephone operating revenues have been on the rise. The operating revenues of the associated Bell Telephone companies constitutes the main source of revenue for the Bell System, accounting for between 85 and 90 percent of the total operating revenues of the system as a whole.²⁹

Net income of associated companies during the same 50-year period increased from \$3,700,000 in 1885 to \$160,000,000 in 1930, and receded to \$118,000,000 in 1933. The associated companies have paid out most of their net income in dividends. The principal recipient of these dividends, of course, is the parent company of the system.

Operating Statistics.

A comparison of the data contained in table 17 on page 57, and in table 7 on page 41, indicates that there are a relatively small number of stations operated by the long lines department of the American Telephone & Telegraph Co., the greater part being attached to the exchanges of the associated companies; that of the 80,000,000 miles of wire, over 73,000,000 miles belonged to the associated companies; all of the central offices were operated by them, as the long-lines department of the American Co. does not operate central offices; all but a small percentage of total Bell Telephone employees were working for the associated companies; and all but a small proportion of the total daily conversations take place over the lines of the associated companies, although the small proportion of the total conversations taking place over the lines of long-lines department produce higher revenue per unit since they involve longer distances. With the exception of long lines and Western Electric Co., the growth of the Bell System is due to the expansion of associated companies. It is not necessary, therefore, to repeat here the growth of the various operating indexes as they relate exclusively to the associated companies.

²⁹ Compare table 6, p. 39, with table 16, p. 56.

TABLE 16.—*Growth of the associated Bell Telephone companies as reflected in their principal income data, years 1885-1930, inclusive, at 5-year intervals, and years 1931-1935, inclusive*

Year ended Dec. 31 (a)	Total telephone operating revenues (b)	Net earnings (c)	Net income (d)	Dividends paid (e)	Undistributed net income (f)
1885.....	\$9,626,047	\$3,712,494	\$3,677,915	\$2,029,134	\$1,648,781
1890.....	15,162,581	5,142,428	5,004,215	3,076,661	1,927,564
1895.....	21,672,072	7,435,638	6,780,847	¹ 3,334,016	3,446,831
1900.....	41,492,999	13,181,898	11,437,287	9,174,713	2,262,574
1905.....	87,505,217	25,370,753	20,953,455	14,456,339	6,497,116
1910.....	149,689,378	39,740,818	31,263,011	23,271,727	7,991,284
1915.....	221,084,559	52,500,093	37,174,241	27,510,453	9,663,788
1920.....	412,476,418	50,969,179	25,634,813	35,397,626	(9,763,313)
1925.....	687,899,471	137,034,492	97,316,066	80,416,432	16,899,654
1930.....	1,018,672,293	211,543,006	159,623,147	140,909,018	18,714,129
1931.....	996,813,626	218,912,900	164,755,496	155,358,722	9,396,774
1932.....	896,243,795	179,094,102	129,284,878	152,932,993	(23,648,115)
1933.....	821,101,170	163,690,018	117,680,830	141,782,159	(24,151,326)
1934.....	822,516,587	170,065,148	125,501,041	129,127,183	(3,626,142)
1935.....	869,439,726	175,931,101	139,157,179	135,060,255	4,096,926

¹ Excludes stock dividend of \$544,400.

Parentheses denote that dividends paid exceeded net income.

Source: Exhibit 1360-A, table 14, p. 68; and exhibit 1360-B, schedule 64.

SECTION 4. GROWTH OF WESTERN ELECTRIC CO., INC

The expansion of the Bell Telephone System has naturally been accompanied by a corresponding development in Western Electric Co., which has been since 1882 the manufacturing affiliate, often called the manufacturing department, of the Bell Telephone System. The growth of this company as reflected in its principal balance sheet items, income statement, and sales data, is indicated in tables 18, 19, and 20, respectively.

Total Assets.

On March 31, 1882, the recorded total assets of the Western Electric Co. of Illinois were \$1,114,000, and the gross plant \$190,000.³⁰ At December 31, 1929, total assets were recorded at \$308,721,000, and gross plant at \$134,564,000. Depreciation reserve at this time was \$64,671,000, leaving net plant of \$69,893,000. At December 31, 1936, recorded total assets were stated at \$203,099,000, and gross plant at \$136,490,000.³¹ Depreciation reserve was recorded at \$72,320,000, leaving net plant of \$64,170,000.

The greatest rate of growth of total assets came in the period 1896 to 1906, when total assets increased almost tenfold from \$6,788,000 to \$63,185,000. An analysis of this growth indicates that only a little over \$10,000,000 of this was in net plant. The real explanation of the 1906 situation of Western is found in the increase of merchandise inventories to a high of \$22,183,000, and of bills and accounts receivable to \$24,555,000, both abnormal levels, presumably due to the inability of Bell companies to absorb and pay for Western products as a result of difficulties of financing. By 1908, total assets were down by about \$19,000,000, and inventories and accounts receivable by a little less than \$10,000,000 each.³²

³⁰ There was no depreciation reserve in 1882.

³¹ See exhibit 2090-C, schedule 3.

³² Ibid.

TABLE 17.—Growth of the associated Bell Telephone companies as reflected in plant and operating statistics, years 1885 to 1930, inclusive, at 5-year intervals, and years 1931 and 1935, inclusive

Year (a)	As of end of year				Average daily total conver- sations (f)
	Bell-owned stations (b)	Total miles of wire (c)	Total Bell central offices (d)	Total number of em- ployees ¹ (e)	
1885.....	(²)	(²)	1, 165	(²)	(²)
1890.....	227, 357	291, 333	1, 241	8, 440	(²)
1895.....	308, 751	587, 119	1, 613	13, 923	2, 390, 051
1900.....	834, 844	1, 794, 391	2, 775	35, 307	5, 810, 318
1905.....	2, 282, 378	5, 411, 719	4, 532	85, 492	13, 890, 106
1910.....	3, 930, 630	11, 154, 596	4, 931	117, 230	22, 252, 130
1915.....	5, 967, 553	17, 985, 452	5, 299	151, 075	25, 955, 217
1920.....	8, 333, 648	24, 459, 197	5, 702	219, 784	33, 083, 494
1925.....	12, 034, 921	43, 928, 234	6, 017	281, 104	48, 690, 238
1930.....	15, 675, 234	71, 037, 136	6, 585	301, 891	65, 132, 969
1931.....	15, 399, 388	73, 185, 638	6, 645	276, 796	64, 747, 122
1932.....	13, 792, 877	73, 815, 052	6, 778	251, 524	60, 946, 000
1933.....	13, 162, 330	73, 601, 890	6, 763	235, 616	57, 136, 000
1934.....	13, 457, 313	73, 433, 922	6, 769	236, 511	58, 674, 000
1935.....	13, 922, 702	73, 686, 340	6, 787	232, 243	60, 960, 000

¹ Includes, in most instances, temporary employees.

² Data not available.

³ Does not include 2 in 1910 and 1 in 1915 reported for the long lines department.

Source: Exhibit 1360-A, tables 15 and 43, pp. 70 and 147, respectively.

From 1906 to 1915 there was comparatively slow growth. At November 17, 1915, the date of transfer of assets from the Illinois Co. to the Western Electric Co., Inc., of New York, total assets were \$64,773,000, hardly more than they were at the end of 1906, but nearly \$21,500,000 more than at the low point in 1909, when total assets were \$43,000,000.³³ After the transfer of properties to the New York Co. and the resultant reorganization, total assets increased to \$77,000,000 at December 31, 1916; \$100,000,000 in 1918, and \$164,563,000 in 1920. In the next 2 years there was again a sharp reduction on account of depressed business conditions, to \$151,877,000 in 1921, and \$137,763,000 in 1922. These changes in total assets were reflected in gross plant, merchandise inventories, cash, deposits, and marketable securities, and bills and accounts receivable. Gross and net plant continued to increase through 1922, when they reached \$49,205,000 and \$18,774,000, respectively. Merchandise inventories soared to \$72,210,000 at December 31, 1920, an increase of \$27,000,000 from the previous year, and declined to \$52,702,000 in 1922. Bills and accounts receivable reached \$45,204,000 in 1920, \$14,600,000 higher than the previous year, and declined to \$37,620,000 in 1922.³⁴ Thus, the experience of 1906-8 was repeated in 1920-22.

The same experience was repeated during 1929-35. Total assets increased from \$195,000,000 at December 31, 1928, to a high of \$308,721,000 at December 31, 1929. At that time gross plant represented \$134,564,000, sundry investments \$62,179,000, merchandise inventories \$95,940,000, bills and accounts receivable \$65,180,000, and cash, deposits, and marketable securities \$15,276,000. At the end of 1935, total assets were stated at \$198,752,000. This indicated a reduction of about \$110,000,000 from December 31, 1929. There

* Ibid.

* Ibid.

was an increase in gross plant of \$3,000,000.³⁵ The reduction in gross assets between 1929 and 1935 was occasioned by sundry investments, \$5,000,000; merchandise inventories, \$51,000,000; bills and accounts receivable, \$48,000,000; and cash, deposits, and marketable securities, \$6,000,000. In 1936 there were indications that a similar cycle was at its initial stages. It is surprising, in view of the absolute coordination of the activities of the associated companies and Western Electric Co., an advantage generally claimed for the existing relationship, and in spite of the unified control of both market and manufacturing, that it has not been possible to smooth the fluctuations of inventories and bills and accounts receivable. When annual sales are considered, it is found that the fluctuations are still more violent.

TABLE 18.—*Growth of Western Electric Co., Inc., and its predecessor as reflected in principal balance sheet data as of close of fiscal periods, 1882 to 1930, inclusive, at 5-year intervals, and as of end of years 1931 to 1935, inclusive*

[Dollars in thousands]

As of—	Total assets	Net plant	Sundry investments	Current assets ¹	Other assets	Capital stock, long-term debt and surplus	Reserves for depreciation
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)
Mar. 31, 1882...	\$1, 114	² \$190	\$5	\$657	\$262	\$380	-----
Nov. 30—							
1886.....	1, 458	295	168	796	199	1, 356	\$83
1891.....	3, 972	1, 085	19	2, 777	91	3, 032	438
1896.....	6, 788	2, 139	85	4, 564	-----	5, 085	1, 184
1901.....	22, 454	6, 841	230	15, 383	-----	17, 873	4, 165
1906.....	63, 185	12, 447	2, 373	48, 365	-----	36, 628	9, 271
Dec. 31—							
1911.....	57, 412	10, 575	3, 759	42, 510	568	50, 192	11, 076
1916.....	77, 088	³ 7, 523	³ 12, 041	57, 181	343	55, 454	13, 320
1921.....	151, 877	17, 645	20, 789	112, 279	1, 184	102, 373	27, 925
1926.....	188, 775	31, 691	16, 544	140, 418	122	143, 509	46, 517
1930.....	304, 498	80, 018	75, 042	139, 980	463	221, 932	74, 805
1931.....	286, 787	86, 982	78, 217	121, 192	396	222, 248	84, 046
1932.....	257, 431	83, 481	71, 352	102, 245	343	207, 709	78, 121
1933.....	242, 245	78, 579	69, 395	94, 072	299	195, 784	82, 582
1934.....	232, 810	74, 104	60, 779	97, 657	270	190, 079	64, 025
1935.....	198, 752	69, 792	57, 025	71, 656	279	156, 242	67, 330
1936.....	203, 099	64, 170	55, 406	83, 233	290	157, 631	72, 320

¹ Includes merchandise inventory, cash, marketable securities, and bills and accounts receivable.

² Gross plant, there being no depreciation reserve in that year.

³ These, and subsequent figures, are not comparable with those preceding, due to the fact that certain foreign investments were consolidated prior to 1913 but treated as investments beginning with that year.

Source: Exhibit 2090-A, table 1, p. 16; table 4, p. 24; table 8, p. 41; and exhibit 2090-C, schedule 3.

Total Sales.

Western Electric sales figures show an equally important expansion. For the year ended November 30, 1886, Western Electric sales amounted to \$1,382,000. By 1929, the annual sales had increased to \$410,950,000, all but \$5,291,000 of which were sold in the United States, and all but \$38,566,000 to Bell customers. Of the total sales by Western in 1929, \$277,715,000 consisted of Western Electric manufactures, and \$133,235,000 of supplies for which Western acted as purchasing agent.

In 1933, total annual sales declined to \$69,511,000, of which \$64,384,000 went to Bell companies. Western Electric manufactures sold in 1933, however, were only \$41,821,000, in contrast to 1929 when they amounted to \$277,715,000. Since the low point of 1933 there has

³⁵ Gross plant reached a high of \$171,000,000 at the end of 1931, but receded after that until at the end of 1935 it was only \$3,000,000 more than as of December 31, 1929.

been gradual expansion of sales, until in 1936 they amounted to \$146,421,000.

In the period from July 1, 1881, to the end of 1936, covering the period of operations of Western Electric Co. of Illinois and of Western Electric Co., Inc., of New York, the total sales amounted to \$5,157,067,000, of which all but a small fraction were sales through domestic houses. Of the total sales, the major part, of course, came in the period 1916 to 1936, covering substantially the activities of the Western Electric Co. of New York. In this period the total sales were \$4,333,430,000. The major portion of all these sales were to the associated Bell Telephone companies. Sales to Bell customers during the whole period 1882 to 1936, inclusive, amounted to \$4,199,289,000, out of a total of \$5,157,067,000, as shown in table 19. Since 1926, when Western Electric sold the non-Bell portion of its supply department to Graybar Electric Co., over 90 percent of the total sales have been made to Bell customers.

TABLE 19.—Sales by classes of customers of Western Electric Co. (Ill.), July 1, 1881, to Nov. 17, 1915, and Western Electric Co., Inc. (N. Y.), Nov. 18, 1915, to Dec. 31, 1936

Year or period ended— (a)	Total sales (b)	Bell customers (c)	Non-Bell customers		
			Total (d)	Domestic customers (e)	Export cus- tomers (f)
Dec. 31, 1882 ¹	\$1,044,000	\$937,000	\$107,000		\$107,000
Nov. 30—					
1883 ²	1,717,000	1,656,000	61,000		61,000
1884	1,436,000	1,151,000	285,000	\$160,000	125,000
1885	1,189,000	876,000	313,000	250,000	63,000
1886	1,382,000	848,000	534,000	471,000	63,000
1887	2,144,000	1,450,000	694,000	604,000	90,000
1888	2,427,000	1,758,000	669,000	584,000	85,000
1889	2,455,000	1,612,000	843,000	711,000	132,000
1890	3,591,000	2,262,000	1,329,000	1,091,000	238,000
1891	3,396,000	2,072,000	1,324,000	1,176,000	148,000
1892	3,897,000	2,301,000	1,596,000	1,390,000	206,000
1893	4,205,000	2,757,000	1,448,000	1,258,000	190,000
1894	4,160,000	2,718,000	1,442,000	1,227,000	215,000
1895	5,667,000	3,990,000	1,677,000	1,454,000	223,000
1896	6,698,000	4,729,000	1,969,000	1,692,000	277,000
1897	7,476,000	4,872,000	2,604,000	2,106,000	498,000
1898	8,958,000	6,299,000	2,659,000	2,263,000	396,000
1899	15,922,000	12,683,000	3,239,000	2,637,000	602,000
1900	22,095,000	17,542,000	4,553,000	3,507,000	1,046,000
1901	21,664,000	16,498,000	5,166,000	4,408,000	758,000
1902	26,638,000	20,864,000	5,774,000	5,012,000	762,000
1903	27,343,000	20,559,000	6,784,000	6,101,000	683,000
1904	28,869,000	22,093,000	6,776,000	6,086,000	690,000
1905	40,478,000	32,279,000	8,199,000	7,510,000	689,000
1906	65,409,000	55,220,000	10,189,000	8,955,000	1,234,000
1907	47,348,000	34,090,000	13,258,000	11,485,000	1,773,000
1908	26,937,000	15,983,000	10,954,000	9,950,000	1,004,000
1909	40,377,000	24,543,000	15,834,000	14,752,000	1,082,000
Dec. 31—					
1910 ³	63,229,000	44,431,000	18,798,000	16,900,000	1,898,000
1911	61,559,000	44,132,000	17,427,000	15,549,000	1,878,000
1912	66,133,000	47,231,000	18,902,000	16,718,000	2,184,000
1913	77,533,000	56,327,000	21,206,000	18,069,000	3,137,000
1914	66,409,000	48,128,000	18,281,000	15,831,000	2,450,000
1915	63,852,000	42,555,000	21,297,000	18,269,000	3,028,000
1916	106,987,000	73,914,000	33,073,000	26,294,000	6,779,000
1917	150,340,000	104,682,000	45,658,000	37,398,000	8,260,000
1918	145,226,000	79,217,000	66,009,000	61,444,000	4,565,000
1919	135,722,000	80,361,000	55,361,000	49,931,000	5,430,000
1920	206,112,000	130,712,000	75,400,000	70,215,000	5,185,000
1921	189,765,000	142,885,000	46,880,000	40,178,000	6,702,000
1922	210,941,000	159,957,000	50,984,000	48,998,000	1,986,000

¹ Represents period from July 1, 1881, to Dec. 31, 1882.

² Represents 11-month period.

³ Represents 13-month period.

TABLE 19.—*Sales by classes of customers of Western Electric Co. (Ill.), July 1, 1881, to Nov. 17, 1915, and Western Electric Co., Inc. (N. Y.), Nov. 18, 1915, to Dec. 31, 1936—Continued*

Year or period ended— (a)	Total sales (b)	Bell customers (c)	Non-Bell customers		
			Total (d)	Domestic customers (e)	Export customers (f)
Dec. 31—					
1923.....	\$255,177,000	\$188,159,000	\$67,018,000	\$63,523,000	\$3,495,000
1924.....	298,281,000	233,300,000	64,981,000	60,708,000	4,273,000
1925.....	297,729,000	226,700,000	71,029,000	67,585,000	3,444,000
1926.....	263,105,000	247,172,000	15,933,000	11,720,000	4,213,000
1927.....	253,724,000	241,062,000	12,662,000	9,335,000	3,327,000
1928.....	287,931,000	267,808,000	20,123,000	16,497,000	3,626,000
1929.....	410,950,000	372,384,000	38,566,000	33,275,000	5,291,000
1930.....	361,478,000	338,830,000	22,648,000	18,289,000	4,359,000
1931.....	228,956,000	219,535,000	9,421,000	7,829,000	1,592,000
1932.....	117,850,000	112,497,000	5,353,000	4,786,000	567,000
1933.....	69,611,000	64,384,000	5,127,000	4,572,000	555,000
1934.....	91,807,000	84,698,000	7,109,000	6,272,000	837,000
1935.....	108,417,000	97,555,000	7,862,000	6,969,000	893,000
1936.....	146,421,000	136,031,000	10,390,000	10,318,000	72,000
Total.....	5,157,067,000	4,199,289,000	957,778,000	854,412,000	103,366,000

⁴ Drop in sales due to sale of the supply department to Graybar Electric Co.

Source: Exhibit 2090-C, schedule 83.

TABLE 20.—*Western Electric Co., Inc., sales to Bell customers and total sales, years 1916 to 1936, inclusive*

(Dollars in thousands)

Year (a)	Western Electric manu- factures			Supplies			Total Western Electric manufactures and supplies		
	Total (b)	Bell (c)	Percent Bell of total (d)	Total (e)	Bell (f)	Percent Bell of total (g)	Total (h)	Bell (i)	Percent Bell of total (j)
1916.....	\$46,457	\$39,792	85.7	\$60,530	\$34,122	56.4	\$106,987	\$73,914	69.1
1917.....	68,242	59,835	87.6	81,998	44,847	54.7	150,240	104,682	69.6
1918.....	66,986	45,449	67.8	78,240	33,768	43.2	145,226	79,217	54.6
1919.....	55,657	42,707	76.7	80,065	37,654	47.0	135,722	80,361	59.2
1920.....	79,406	70,197	88.4	126,706	60,515	47.8	206,112	130,712	63.4
1921.....	111,614	100,696	90.2	78,151	42,189	54.0	189,765	142,885	75.3
1922.....	124,915	115,952	92.8	86,026	44,005	51.2	210,941	159,957	75.8
1923.....	143,643	132,118	92.0	111,534	56,041	50.3	255,177	189,159	74.1
1924.....	192,021	177,427	92.4	106,260	55,873	52.6	298,281	233,300	78.2
1925.....	181,653	166,885	91.8	116,076	59,815	51.5	297,729	226,700	76.2
1926.....	192,237	176,687	91.9	70,898	70,495	99.5	263,105	247,172	93.9
1927.....	183,106	170,914	93.3	70,618	70,148	99.3	253,724	241,062	94.6
1928.....	199,562	179,806	90.1	58,369	58,002	99.6	257,931	237,808	92.2
1929.....	277,715	242,084	87.2	133,235	130,300	97.8	410,950	372,384	90.6
1930.....	272,690	251,866	92.3	58,598	56,974	97.2	331,288	308,830	93.2
1931.....	171,598	162,702	94.8	57,358	56,833	99.1	228,956	219,535	95.9
1932.....	81,001	76,010	93.8	36,849	36,487	99.0	117,850	112,497	95.4
1933.....	41,821	36,968	88.4	27,690	27,416	99.0	69,511	64,384	92.6
1934.....	63,473	57,021	89.8	28,334	27,677	97.7	91,807	84,698	92.3
1935.....	75,420	68,236	90.5	29,997	29,219	97.7	105,417	97,555	92.5
1936.....	110,190	100,658	91.3	36,231	35,373	97.6	146,421	136,031	92.9
Total.....	2,739,697	2,474,000	90.3	1,593,733	1,127,843	70.8	4,333,430	3,601,843	83.1

Source: Exhibit 50, table 12, p. 72; and exhibit 2091, schedules 1, 2, and 3.

Plant Expansion.

Western Electric Co. of Illinois.—The manufacture of telephone apparatus and equipment during the period 1882–89 was carried on at the company's Clinton Street shop in Chicago and at the old Western Union shop in New York City, which was leased by the Western Union to the Western Electric Manufacturing Co. in 1879, for a period of 10 years. The Boston shop of Charles Williams, Jr., which had been acquired by the Western Electric Co. from the American Bell Telephone Co. in 1883 was moved to New York City in 1885. With the expiration of the lease on the Western Union shop in New York in 1889, the New York shops were moved to a 10-story building located at the corner of Thomas and Greenwich Streets, New York.³⁶ By 1895 these accommodations had become inadequate. Lots were purchased at 463 West Street, and buildings erected between 1896 and 1899. Until 1914, when the last of the shops were moved to Hawthorne, the buildings were used primarily for factory purposes. In 1907, with the removal of the general offices from Chicago to New York, the upper floors of the West Street building were used by the general department of the Western Electric Co. From 1914 to 1916 the building was occupied jointly by the New York engineering department, the New York distributing house, and the general administration offices. The general offices were moved to 195 Broadway in 1916.

The rapid increase in business of the Western Electric Co. resulted in the building of a single modern factory at Hawthorne, near Chicago. Construction was started in 1902. The Hawthorne location was selected because of unexcelled shipping and receiving facilities and the easy access to an unlimited labor market. The Hawthorne Works has been expanded from time to time as requirements demanded. Absorption of the New York shops at Hawthorne began in 1908, and was completed in 1914.³⁷

On October 24, 1888, the Western Electric Co. was authorized to purchase stock in the Standard Electrical Works. This purchase eliminated the Standard Electrical Works as a competitor.

On September 8, 1910, the Western Electric Co. sold its general power business to the General Electric Co. and Westinghouse. While no specific provision in the contract of sale provided that the two companies should refrain from entering the telephone manufacturing field, it is significant that neither ever has manufactured telephones or telephonic equipment.

In order to accommodate the requirements for Bell System telephone apparatus and equipment in foreign countries, the Western Electric Co. established foreign branches in the following locations: Antwerp, Belgium, in 1882; London, 1883; Berlin, 1889; Milan, 1896; Vienna and Petrograd, 1897; Tokyo and Sydney, 1899; Montreal, 1901; Johannesburg, 1903; Northern Electric Co., Ltd., of Canada, 1905; Buenos Aires, 1911; Budapest, 1913; and the China Electric Co., Ltd., in 1915. Some of these branches were established as new houses, while others were the result of purchases. Outside of the United States, most telephone systems were owned by the government as a part of the department of posts and telegraph. Insofar as prac-

³⁶ See exhibit 1952, p. 29.

³⁷ Ibid., pp. 29–30.

ticable, the foreign branches of the Western Electric Co. were established under native management and operated under local control. The chief sales were in telephonic equipment. Difficulties in marketing conditions prevented the development of a large supply business in foreign countries.

On November 5, 1913, the Western Electric Co. formed a Canadian company, with a capital of \$1,000,000, for the purpose of owning and holding stock and other securities in foreign subsidiaries and to manage and control such foreign business. The original name of this company was Electrical Properties, Ltd. On November 23, 1914, the name was changed to Western Electric Co., Ltd., of Canada.³⁸

Western Electric Co. of New York.—The continued growth of the business of the Western Electric Co. in the decade 1920-30 necessitated expansion of manufacturing plant, warehousing, and office facilities. The stimulus to the business during this decade was occasioned, in part, by the demands of the post-war period, the changes in equipment of operating telephone companies, and the construction and reconstruction of toll lines. A brief description of this expansion is set out immediately below.

(1) *Manufacturing.*³⁹—The Hawthorne plant at Chicago had enjoyed a steady growth since it was founded in 1902. The original factory was planned so as to permit indefinite expansion. At the present time its principal products are: Substation apparatus, dial central-office equipment, loading coils, exchange cable, toll cable for Bell System companies operating in the Middle West, and certain specialty products.

By 1922 the Hawthorne plant had become a complete manufacturing unit. Further additions were considered undesirable, inasmuch as the plant had grown more rapidly than the districts from which its labor supply was drawn. Difficulty was encountered in obtaining an adequate labor supply within a reasonable distance of the plant. An eastern location was desirable, due to the large amount of telephone equipment sold on the eastern seaboard and the savings that would accrue in freight charges to Bell System companies in the event additional manufacturing facilities were located in the East. Accordingly, in February 1923, Western purchased a location at Kearny, N. J. The particular location was selected because of its close proximity to a populous district, its excellent water and rail facilities, and the availability of a good labor supply. By 1928 most of the Kearny plant, as originally planned, had been completed. The activities of the Kearny plant at the present time are confined largely to the manufacture of manual central-office equipment and cable.

In 1928 company officials decided that it was impractical to expand the Kearny cable plant sufficiently to provide the additional capacity needed to meet the estimated eastern requirements for toll cable. It was thought that eastern toll cable should be manufactured in one plant and exchange cable in another, in order to avoid duplication of equipment. Inasmuch as exchange cable equipment was already installed at Kearny, it was decided to construct a new plant to supply the toll cable requirements in the East. Also, facilities for the manufacture of rubber-covered wire, having an annual capacity of 500,000,000 feet of drop wire, were included in the plans for the new

³⁸ See exhibit 2090-A, pp. 28 and 67.

³⁹ See exhibit 1952, pp. 29-34.

plant. In 1928 Western purchased a tract of land at Point Breeze, within the city limits of Baltimore, Md. Baltimore was selected as the site of the new factory because of alleged satisfactory rail and water facilities, the large population of the city and its environs, which would afford a good labor market, and the liberal policy of the city authorities and the Association of Commerce in encouraging new industries in Baltimore. Early in 1930 the first cable shop and the power plant for the works were completed. The toll-cable manufacturing capacity of Western was thereby doubled. The plant, as planned, was never fully completed, due to business conditions occasioned by the depression. The principal manufactured products of the Point Breeze works at the present time are rubber-covered wire, terminal boxes and protector equipment, and lead-covered cable.

On November 1, 1929, Western purchased the plant of the Turner-Armour Corporation, located at 6600 Metropolitan Avenue, Queens, and leased that company's plant located at 1201 Flushing Avenue, Brooklyn, N. Y. The Turner-Armour Corporation for years had manufactured telephone booths for Western at the above two plants. In view of the rapid growth of Western's manufacturing activities, the company thought it could manufacture telephone booths more cheaply than it could purchase them. Also, control by Western of the manufacture of wood products would assure necessary plant expansion when needed.

The Clearing shop of Western was established in May 1929. It is a small factory located near the Hawthorne works, devoted to the production of certain items of pole-line hardware, such as braces, bolts, guy clamps, etc., and to the general galvanizing of Western's products.

In May 1934 the tube shop of Western was purchased from the Bell Telephone Laboratories, Inc. It is located at 395 Hudson Street, New York City, is operated by the engineer of manufacture department of Western, and is devoted to the manufacture of vacuum tubes, extensively used in telephony.

The total investment in the Western Electric Co., exclusive of subsidiaries, as of December 31, 1935, in land, buildings, service equipment, machinery, small tools, furniture and fixtures, amounted to \$137,122,434, after a write-off of \$8,233,301 to a reserve accumulated in previous years to provide for anticipated decline in plant costs. Total floor space on December 31, 1934, amounted to 8,206,000 square feet. All except 100,000 square feet is owned by Western. The total number of employees in the Western Electric Co. at December 31, 1935, was 21,033. The peak of employment was reached in 1929, with a total of 84,848 employees. Total net sales for the year ending December 31, 1935, amounted to \$105,417,000. The peak was reached in 1929, with a total of \$410,950,000 net sales.

(2) *Warehousing*.⁴⁰—As stated heretofore, the Western Electric Co. acts as a purchasing agent for associated Bell companies for products not of Western manufacture. Products purchased by Western for resale to the associated Bell companies are handled through various distributing warehouses which have been provided from time to time since 1901. Shops are maintained in the distributing houses. These shops are used to repair equipment returned by operating companies and are capable of manufacturing special or small quan-

⁴⁰ See *ibid.*, pp. 35-36.

ties of equipment more economically than is possible at the main works of Western. All distributing houses carry stocks of apparatus and equipment to meet the current requirements of the telephone companies which they serve. All orders placed on the Western Electric Co. by the associated Bell companies are handled through the distributing houses, shipments being made either from local shops or directly from Western's works to the Bell companies.

At the present time, there is a chain of distributing houses and warehouses located in 29 principal cities throughout the United States. These locations are as follows: Atlanta, Ga.; Boston, Mass.; Brooklyn, N. Y.; Chicago, Ill.; Cincinnati, Ohio; Cleveland, Ohio; Dallas, Tex.; Denver, Colo.; Detroit, Mich.; Houston, Tex.; Indianapolis, Ind.; Jacksonville, Fla.; Kansas City, Mo.; Los Angeles, Calif.; Louisville, Ky.; Milwaukee, Wis.; Minneapolis, Minn.; Newark, N. J.; New Haven, Conn.; New Orleans, La.; New York, N. Y.; Omaha, Nebr.; Philadelphia and Pittsburgh, Pa.; Portland, Oreg.; San Francisco, Calif.; St. Louis, Mo.; Seattle, Wash.; and Washington, D. C.

The total floor space of these buildings in 1935 was approximately 3,200,000 square feet. As of December 31, 1935, the Western Electric Co. owned 4 of these distributing-house properties outright, was joint owner of 1, leased 6 from private corporations and 18 from Bell associated companies. The total number of distributing-house employees as of December 31, 1935, was 4,688.

(3) *Office.*—As stated heretofore, the building at 463 West Street, New York City, was occupied jointly by the New York engineering department, the New York distributing house, and the general department. Space requirements of the New York distributing house became acute. By 1920 distribution facilities were housed in 13 separate buildings within the city of New York. In order to relieve this congestion and to eliminate the inconvenience occasioned by the various locations, the Western Electric Co., in 1920, organized what was known as the 395 Hudson Street Corporation. The new company was 100-percent owned by the Western Electric Co. It was formed for the purpose of constructing a separate building to house the telephone supply business of the New York department. Upon its completion in 1921 some of the general offices of the Western Electric Co., including the comptroller, advertising, International Western Electric, switchboard installation, and governmental departments, were accommodated therein, in addition to the New York distributing house. After the organization of the 195 Broadway Corporation by the American Co. and construction of a building at that location in New York City, the general executive offices of Western were removed to that building.

CHAPTER 3

CORPORATE AND CAPITAL STRUCTURE OF THE BELL SYSTEM

The historical survey of the development of the various corporate entities in the Bell System as given in the preceding chapters is essential to an understanding of the problems that are discussed later for many of the policies of the Bell System have been evolved through several decades. The regulatory problems that these policies create are of importance today and will continue to be in the future. It is necessary, therefore, to understand the structure of the Bell System and the corporate interrelationship of the various entities therein. In this chapter a survey of the corporate and capital structures of the Bell System is presented.

SECTION 1. CORPORATE STRUCTURE ¹

At the top of the Bell System is the American Telephone & Telegraph Co., which, as heretofore mentioned, is a holding company in that it owns controlling securities in operating companies. It also supplies license-contract services to them, and performs the functions of an operating company in the long-distance telephone field through its long lines department. There were 273 corporations at the end of 1934, in which the American Co. had direct or indirect ownership of 10 percent or more of voting securities, or had potential control through various means. In 181 of these companies the direct or indirect ownership of the outstanding voting securities was 50 percent, or more. Of these, 152 companies were active and 29 were inactive. The telephone companies constituted the largest number of controlled active companies, to wit, 104, and the remaining 48 active companies were engaged in various nontelephonic fields.²

Associated Bell Telephone Companies.

The greater part of the Bell System's gross assets of over \$5,000,-000,000 are represented by those of the immediate subsidiaries of the parent company and consist principally of telephone property. Chart 6, opposite page 66, shows, for the 59 companies in which American Telephone & Telegraph Co. had direct ownership of more than 10 percent of voting securities as of December 31, 1934, the percent of such securities owned. In order that the chart might include all of the 24 ³ associated companies, three wholly owned subsidiaries of the Pacific Telephone & Telegraph Co. are shown. Of the 21 associated com-

¹ As this investigation was initiated in 1935, and many of the studies were projected at that time, the available facts were as of December 31, 1934. Many of these facts are of such a nature and so expensive to secure that it was not feasible to put them on a continuous basis. Hence, many of the facts herein stated will be as of December 31, 1934. Important changes which are known will be indicated; other changes may have occurred since that date, but are not sufficiently important to affect the appearance of the system or the functions it performs.

² See exhibit 60, ch. 2, table 1, p. 26.

³ There were 24 as of Dec. 31, 1934. The merger, as of December 1, 1935, of the Home Telephone & Telegraph Co. of Spokane with its parent, the Pacific Telephone & Telegraph Co., reduced the number to 23.

panies in which American Telephone & Telegraph Co. had direct stock interest, it owned more than 50 percent of the voting securities of 19. In the other two, the Southern New England Telephone Co. and the Cincinnati & Suburban Bell Telephone Co., the voting security ownership percentages were 33.34 and 29.72, respectively. The associated Bell Telephone companies control between 80 and 90 percent of the telephone business of the United States, depending upon the basis of measurement used. They own the subscribers', telephone stations and own or lease all property that is necessary to supply exchange and toll service within their respective operating areas. The book cost of their telephone plant and equipment as of December 31, 1935, was over \$3,800,000,000. The Cuban-American Telephone & Telegraph Co. and the Transpacific Communication Co., Ltd., were engaged in foreign telephone service. The American Co. owned 24.22 percent of the stock of Bell Telephone Co. of Canada. The Eastern Telephone & Telegraph Co., another direct subsidiary of the American Co., was inactive although it was projected for trans-Atlantic cable service. Thirty of the direct subsidiaries of American Co. were organized in various States with the primary function of holding title to its long lines properties.⁴ The remaining four companies shown on chart 6 were nontelephone operating organizations. Of these, Western Electric Co., Inc., manufactures telephone equipment and acts as purchasing agent for the Bell System, and Bell Telephone Laboratories, Inc., does research and development work.

The territory and population served by the associated Bell Telephone companies, and the stations in service as of December 31, 1935, as well as the telephone revenues for the year ended that date are given in table 21, page 68. It is seen therefrom that the associated companies served nearly 3,000,000 square miles of land area. The estimated population in the exchange areas of these companies at the end of 1935, was 127,000,000; the average number of stations in service, 13,584,565; the average per hundred population, 10.67 stations. The District of Columbia had the largest number of stations per hundred population, namely, 36.49; and the Southern Bell Telephone & Telegraph Co. had the lowest number of telephones per hundred population, namely, 4.06. The gross telephone revenues in 1935 were \$869,600,000, or an average of \$64 per telephone station. The geographical limits within which each of the associated companies operates are shown in the map on page 67.

Many of the subsidiaries of the American Co., in turn, have their own subsidiary companies. There were, at the end of 1934, 129 connecting telephone companies in which associated companies had 10 percent or more interest, or had potential control through various means. In 85 of these companies their interest was controlling. There were, in addition, some 22 nontelephonic companies with 10 percent or more interest, or potential control through various means, of which 18 were controlled. Finally, the associated companies had 24 inactive subsidiaries.⁵ As these companies are unimportant in size in comparison with the associated companies and the Western Electric Co., no detailed list of the subsidiaries is here given.⁶

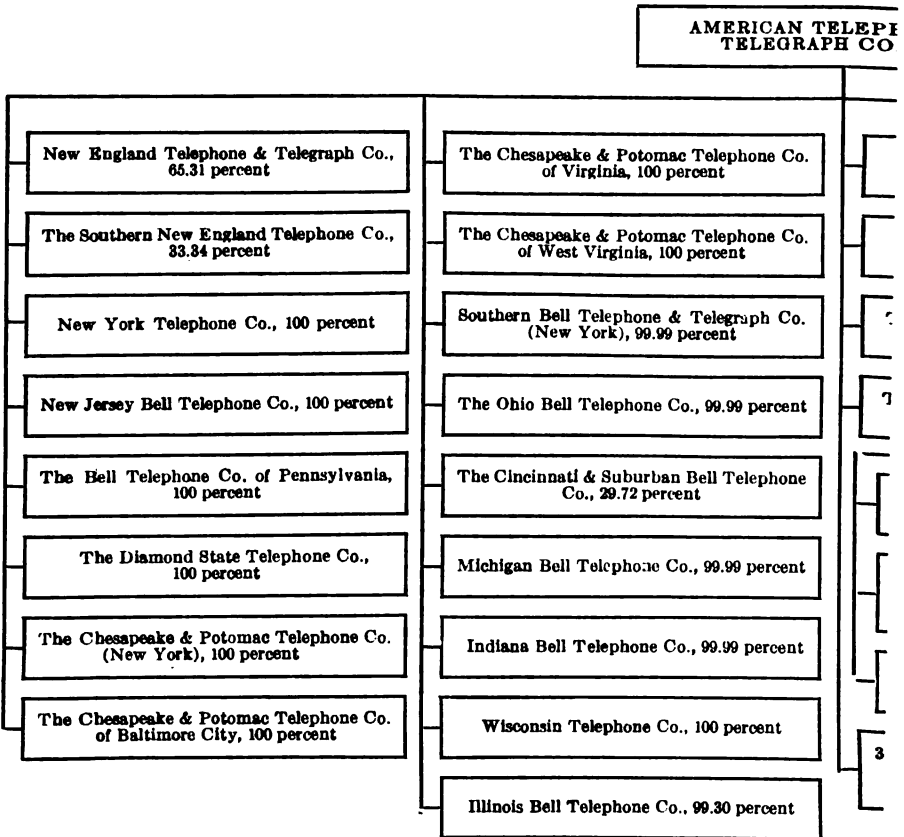
⁴ See exhibit 50, chart 16, for a list of these companies.

⁵ See exhibit 50, table 3, p. 30.

⁶ The subsidiaries and affiliated companies of the associated companies, as of the end of 1934, are given in detail in charts 2 to 15, inclusive, in exhibit 50.

CHART 6

INTERCORPORATE RELATIONSHIPS OF PRINCIPAL BELL
OWNERSHIP OF VOTING STOCKS,



¹ Inactive.

² Dissolved in 1936.

NOTE.—This chart presents only companies in which American Telephone & Telegraph Co. has direct stock ownership. Companies on this chart have their own subsidiaries.

Source: See exhibit 50, chart 1.

THE BELL TELEPHONE SYSTEM

(TERRITORIES OF THE ASSOCIATED TELEPHONE COMPANIES)

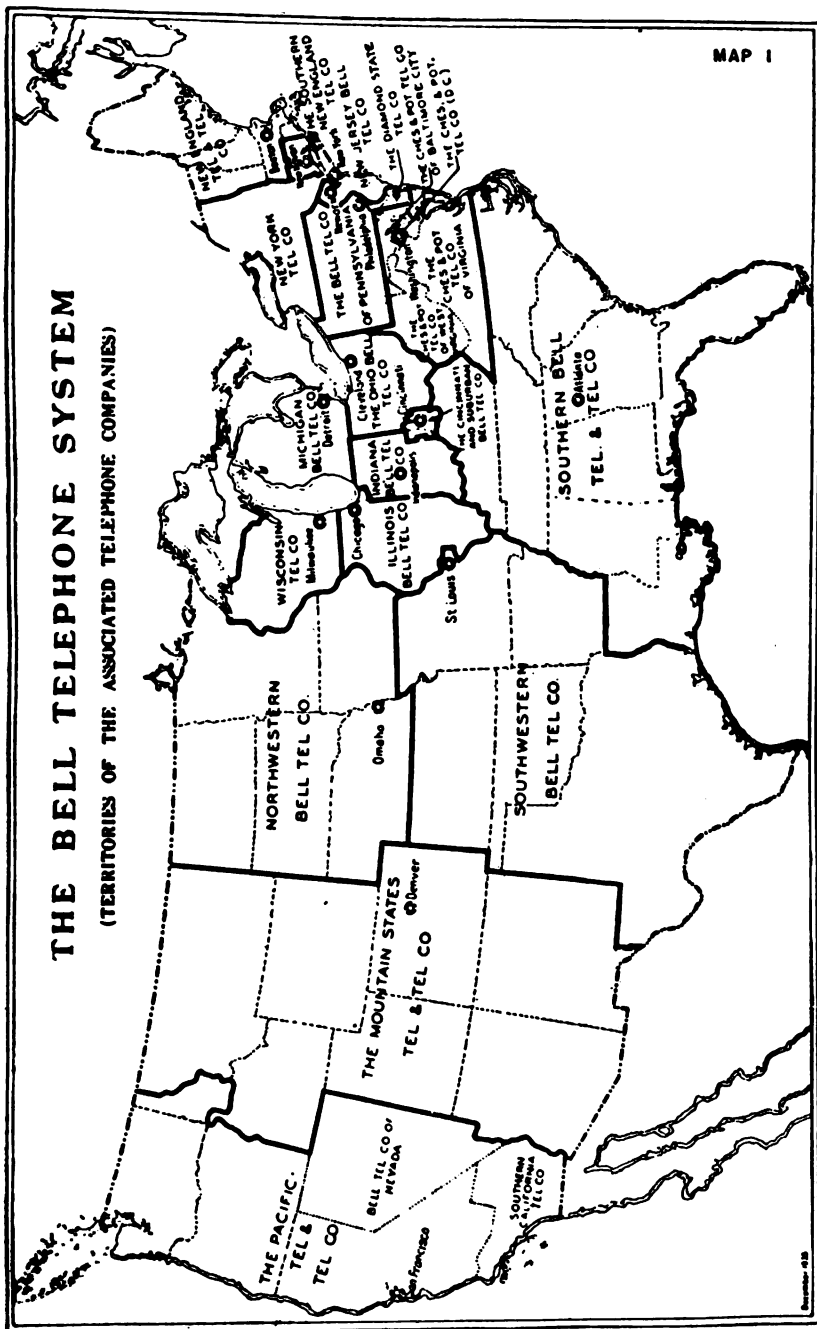


TABLE 21.—Territory and population served, stations in service, and telephone revenues, associated Bell Telephone companies, 1935

Item	Name of company (a)	States served (b)	Approximate square miles of land area served (c)	Estimated population in exchange area served (d)	Average number of stations in service		Gross telephone revenues ¹		Average telephone revenue per station (i)
					Total (e)	Per 100 popula- tion (f)	Total (g)	Per 100 popula- tion (h)	
1	New England Telephone & Telegraph Co.	Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont.	57,160	6,721,000	1,126,053	16.75	\$68,031,596	\$1,012	\$80.42
2	The Southern New England Telephone Co.	Connecticut ²	4,780	1,628,000	299,626	18.40	15,687,402	964	82.36
3	New York Telephone Co.	New York and a small part of Connecticut.	47,690	13,135,000	2,294,334	17.47	189,753,056	1,445	82.71
4	New Jersey Bell Telephone Co.	New Jersey.	7,510	4,240,000	615,291	14.51	42,501,052	1,002	69.07
5	The Bell Telephone Co. of Pennsylvania.	Pennsylvania.	44,830	9,970,000	1,055,406	10.59	61,145,634	613	57.94
6	The Diamond State Telephone Co.	Delaware.	1,965	245,000	33,011	13.47	1,929,871	788	58.46
7	The Chesapeake & Potomac Telephone Co.	District of Columbia.		535,000	195,247	36.49	10,071,470	1,883	51.58
8	The Chesapeake & Potomac Telephone Co. of Baltimore City.	Maryland.		1,680,000	208,513	12.41	13,295,252	791	63.76
9	The Chesapeake & Potomac Telephone Co. of Virginia.	Virginia.	74,280	2,504,000	147,513	5.89	8,100,847	324	54.92
10	The Chesapeake & Potomac Telephone Co. of West Virginia.	West Virginia.		1,815,000	103,208	5.69	5,399,588	297	52.32
11	Southern Bell Telephone & Telegraph Co.	Alabama, Florida, Georgia, Kentucky, ³ Louisiana, Mississippi, North Carolina, South Carolina, and Tennessee.	416,530	21,960,000	890,902	4.06	52,753,981	240	59.21
12	The Ohio Bell Telephone Co.	Ohio ²	39,390	6,140,000	561,847	9.15	35,843,003	584	63.79
13	The Cincinnati & Suburban Bell Telephone Co.	Cincinnati, Ohio, and vicinity.	3,580	993,000	152,351	15.34	8,592,116	895	58.37
14	Michigan Bell Telephone Co.	Michigan and a small part of Wisconsin.	57,780	5,000,000	518,422	10.37	32,790,336	656	63.25
15	Indiana Bell Telephone Co.	Indiana ²	34,120	2,981,000	179,295	6.01	10,792,341	362	40.19
16	Wisconsin Telephone Co.	Wisconsin ²	54,960	3,060,000	316,881	10.36	15,320,102	501	48.35
17	Illinois Bell Telephone Co.	Illinois ² and a small part of Indiana.	55,850	7,942,000	1,207,372	15.20	76,396,980	962	63.28
18	Northwestern Bell Telephone Co.	Iowa, Minnesota, Nebraska, North Dakota, and South Dakota.	360,300	8,012,000	1,578,904	7.23	30,271,187	378	52.29
19	Southwestern Bell Telephone Co.	Arkansas, Kansas, Missouri, Oklahoma, Texas, ² and a small part of Illinois.	535,020	16,306,000	1,208,809	7.41	73,874,679	453	61.11

20	The Mountain States Telephone & Telegraph Co.	Arizona, Colorado, Idaho, ¹ Montana, New Mexico, Utah, Wyoming, and a small part of Texas.	721, 150	3, 749, 000	398, 065	10. 62	20, 418, 620	545	51. 30
21	The Pacific Telephone & Telegraph Co. (System)	California, Nevada, Oregon, Washington, and a small part of Idaho.	446, 880	8, 684, 000	1, 493, 525	17. 20	96, 360, 214	1, 110	64. 52
22	Total.....	.....	2, 973, 775	127, 300, 000	13, 384, 565	10. 67	869, 629, 927	683	64. 02

¹ Uncollectible revenues of \$3,307,029 and duplications of \$190,202 in rent revenues have not been deducted.

² A small part of this State is served by one of the other companies.

Source: Exhibit 1260-A, table 61, p. 199.

Nontelephonic subsidiaries.

The four organizations not supplying telephone service in which the American Co. has direct interest are Western Electric Co., Inc.; Bell Telephone Laboratories, Inc.; 195 Broadway Corporation; and Bell Telephone Securities Co. The Securities Co. has been practically inactive since 1933 and was dissolved in September 1936. The 195 Broadway Corporation owns and operates the headquarters building of the American Co. in New York City. Bell Telephone Laboratories, as is well known, does research and development work for the Bell System, and Western Electric Co., Inc., manufactures telephone and other apparatus.⁷

Western Electric Co., Inc., the manufacturing subsidiary of the American Co., had direct or indirect control of 36 other companies, 5 of which were inactive as of the end of 1934. Of the 31 active companies Electrical Research Products, Inc., a subsidiary of Western, whose primary field of interest has been sound motion picture recording and reproduction, heads the most numerous group of the Western Electric subsidiaries, having 2 domestic and 21 foreign subsidiaries. Teletype Corporation, another subsidiary of Western engaged in the manufacture and sale of teletypewriters, controls in turn the Teletypesetter Corporation. Nassau Smelting & Refining Co., Inc., is also a subsidiary of Western and engages in the reclamation of the waste materials of the Bell System. Another subsidiary of Western is Manufacturers Junction Railway Co., operating a small railway line in the Hawthorne plant in Chicago. Finally, 395 Hudson Street Corporation, which owns a building at that address in New York City, used jointly by Western Electric & Bell Telephone Laboratories, Inc., is also a subsidiary of Western Electric. In addition to these, Western Electric Co. has 43.6 percent interest in the voting stock of Northern Electric Co., Ltd., of Canada, a manufacturing subsidiary of the Bell Telephone Co. of Canada,⁸ which owns the remaining 56.4 percent of the outstanding voting stock.

SECTION 2. CAPITAL STRUCTURE

The activities of the Bell System which have been described hitherto are carried on, of course, with the use of economic resources which are set forth, in terms of monetary measure, as assets on the balance sheet at any given time. These resources, on the other hand, have been accumulated from various sources and from different classes of investors, and these obligations are classified as liabilities. The assets and the liabilities of a corporation as of any given moment give a glimpse of the economic and financial framework within which the enterprise operates. Having described the legal and corporate instrumentalities that are used in the Bell System, and the variety of activities which it conducts with their employment, it is proposed here to outline briefly the financial organization, first, of the American Co. and its associated companies; then, the American Co. alone; thirdly, the associated companies; and, finally, the Western Electric Co. For this purpose, the status as of December 31, 1935, will be considered.

⁷ See sec. 2 of ch. 4 for a more complete description of Western Electric functions.

⁸ See exhibit 50, table 4, p. 32.

TABLE 22.—*Consolidated balance sheet of American Telephone & Telegraph Co.¹ and its 23 associated telephone companies as of Dec. 31, 1935*

Item	Particulars (a)	Amount (b)	Percent of total (c)
ASSETS			
Telephone plant and equipment:			
1	Book cost.....	\$4, 266, 584, 160	
2	Less depreciation reserves ²	1, 061, 650, 114	
3	Net book cost.....	\$3, 204, 934, 046	80. 17
4	Investments in controlled companies not consolidated.....	231, 875, 128	5. 80
5	Other investments.....	79, 056, 566	1. 98
6	Sinking funds.....	3, 999, 117	. 10
7	Current assets.....	³ 452, 350, 421	11. 31
8	Deferred debits.....	25, 486, 974	. 64
9	Total assets.....	3, 997, 702, 252	100. 00
LIABILITIES			
Capital stock:			
American Telephone & Telegraph Co.:			
10	Capital stock outstanding.....	1, 866, 227, 500	46. 68
11	Premiums on capital stock.....	268, 749, 078	6. 72
12	Capital stock installments.....	4, 330, 337	. 11
13	Total American Co.....	2, 139, 306, 915	53. 51
Associated telephone companies:			
14	Common stock held by public.....	131, 979, 143	3. 30
15	Preferred stock held by public.....	97, 937, 600	2. 45
16	Total associated telephone companies.....	229, 916, 743	5. 75
17	Total capital stock.....	2, 369, 223, 658	59. 26
Long-term debt:			
American Telephone & Telegraph Co.:			
18	Bonds and miscellaneous notes.....	⁴ 442, 880, 600	11. 08
19	Notes sold to trustee of pension funds.....	11, 022, 113	. 28
20	Total American Co.....	453, 902, 713	11. 36
Associated telephone companies:			
21	Bonds and miscellaneous notes.....	461, 222, 225	11. 54
22	Notes sold to trustee of pension funds.....	114, 415, 925	2. 86
23	Total associated telephone companies.....	575, 638, 150	14. 40
24	Total long-term debt.....	1, 029, 540, 863	25. 76
25	Current and accrued liabilities.....	⁵ 230, 473, 653	5. 77
26	Deferred credits and miscellaneous reserves.....	4, 563, 312	. 11
27	Surplus of associated telephone companies applicable to their capital stocks held by public.....	8, 914, 411	. 22
Consolidated surplus applicable to capital stock of American Telephone & Telegraph Co.:			
28	Surplus reserved.....	86, 043, 049	2. 15
29	Unappropriated surplus.....	268, 943, 306	6. 73
30	Total liabilities.....	3, 997, 702, 252	100. 00

¹ Includes its 30 nonoperating State subsidiary companies which are maintained in connection with the long lines department.

² Includes \$543,031 of amortization reserves.

³ Includes \$44,000,000 cash deposited with trustee on account of bonds called for redemption on Feb. 1, 1936.

⁴ Excludes \$652,000 bonds held in sinking funds of associated telephone companies.

⁵ Includes \$51,278,430, consisting of \$49,836,600 principal amount and \$2,441,830 premium payable on bonds, called for redemption on Feb. 1, 1936.

Source: Annual Report to Stockholders of American Telephone & Telegraph Co. for 1935, pp. 14 and 15

Bell System.

The capital structure of the Bell System is reflected in the balance sheet presented as table 22. The companies there included on a consolidated basis comprise the parent American Co. and its 23 associated telephone companies.⁹ American Co.'s other directly or indirectly owned subsidiaries are carried as investments. It will be seen that the capital structure shown by table 22 represents Bell System securities in the hands of the public, together with related surplus and premium accounts, as distinguished from what would be obtained by a mere combination of the capital structures of each of the constituent companies. Treatment of depreciation reserves as a deduction from book cost of telephone plant and equipment in the balance sheet is a departure from the form used by the American Co. in its published reports and from the system of accounts prescribed by the Federal Communications Commission. The deduction of depreciation reserves from the investment in physical plant and the corresponding reduction in total assets, together with the elimination of depreciation reserves as liabilities in the balance sheet, is considered proper in a statement designed to show capital structure, since, if the depreciation reserve is a proper measure of the loss in service value, the amount should be deducted from the investment in fixed assets to which it relates.

The tabulation below is a summarization of the capital structure portion of table 22:

	Amount	Percent of total
Capital-stock equity:		
American Co.:		
Common stock, installments, and premium.....	\$2, 139, 307, 000	56.9
Surplus applicable.....	354, 986, 000	9.4
Total.....	2, 494, 293, 000	66.3
Associated companies:		
Common stock.....	131, 979, 000	3.5
Surplus applicable.....	8, 914, 000	.2
Preferred stock.....	97, 938, 000	2.6
Total.....	238, 831, 000	6.3
Total capital stock equity.....	2, 733, 124, 000	72.6
Long-term debt:		
American Co.	453, 903, 000	12.1
Associated companies.....	576, 638, 000	15.3
Total long-term debt.....	1, 029, 541, 000	27.4
Total capitalization.....	3, 762, 665, 000	100.0

More than two-thirds of the capitalization of the Bell System is represented by the equity of the holders of its common stock, consisting of amounts paid in at the time of the issuance of such stock,¹⁰ and undistributed surplus representing earnings in excess of dividends paid. Common stock of the American Co. accounts for, by far, the

⁹ As heretofore noted, the 23 associated companies include 2 in which American Co. does not own a controlling stock interest. Beginning in 1936, Bell System published financial statements, and statistics have been on the basis of consolidating the accounts and statistics of the American Co. and its principal telephone subsidiaries. This has resulted in the exclusion, from all 1936 and subsequent consolidated figures, of the 2 noncontrolled associated companies, and the inclusion of 4 companies, namely: Christian-Todd Telephone Co., the Tri-State Telephone & Telegraph Co., Dakota Central Telephone Co., and the United Telephone Co. Unless otherwise stated, all Bell System data in this report are on the pre-1936 basis.

¹⁰ Including face amounts of convertible bonds surrendered in exchange for common stock.

major portion of the total of common stocks of Bell System companies in the hands of the public.

This is shown by the following tabulation:

	Amount	Percent of total
American Telephone & Telegraph Co.....	\$1,888,227,500	93.4
New England Telephone & Telegraph Co.....	48,251,600	2.3
The Southern New England Telephone Co.....	26,662,600	1.3
The Cincinnati & Suburban Bell Telephone Co.....	19,319,250	1.0
Illinois Bell Telephone Co.....	1,040,400	.1
The Mountain States Telephone & Telegraph Co.....	13,062,200	.6
The Pacific Telephone & Telegraph Co.....	25,629,100	1.3
Others.....	13,993	-----
Total.....	1,998,206,643	100.0

The only Bell System preferred stocks are those of the associated companies, the largest issues of which, at the end of 1935, were as follows: New York Telephone Co., \$25,000,000; Bell Telephone Co. of Pennsylvania, \$20,000,000; Southwestern Bell Telephone Co., \$21,785,500; and Pacific Telephone & Telegraph Co., \$17,904,300. These issues are all shown on table 25, page 77. Seventy-eight percent of the preferred stock of the Pacific Telephone & Telegraph Co. was owned by the American Co.; the balance of this issue, as well as all the others, was outstanding in the hands of the public at December 31, 1935.

In contrast to the large proportion of the Bell System capitalization represented by stockholders' equity, long-term debt accounted for only a little over one-fourth of total capitalization at December 31, 1935. This was fairly evenly divided between issues of the American Co. and issues of the associated companies combined. Ten of the 23 associated companies had long-term debt outstanding in substantial amounts. This is, of course, aside from notes sold to trustee of pension funds; each associated company has issued these. As a general rule the long-term debt of the associated companies has been secured by property mortgages. The American Co., on the other hand, has generally borrowed money upon its unsecured obligations; however, these have usually provided for restrictions upon its right to pledge or mortgage assets as security for other or subsequent loans.¹¹

Stockholders' equity accounts for almost three-fourths of Bell System capitalization, with the remainder being represented by long-term debt. The major portion of the stock in the hands of the public is that of the American Co., but of the long-term debt more than half was incurred by the associated companies.

American Telephone & Telegraph Co.

Table 23 is a balance sheet of the American Co. as of December 31, 1935. It covers the American Co. alone.¹² This explains the small

¹¹ See Bell Telephone Securities, an annually revised pamphlet issued by American Telephone & Telegraph Co.

¹² As is brought out elsewhere in this report, American Telephone & Telegraph Co. has 30 wholly owned subsidiaries organized in connection with the operations of its long lines department. As of Dec. 31, 1935, all but 2 of these 30 companies owned telephone plant, their combined holdings being in excess of \$250,000,000. (See p. 30 of prospectus on the 1936 issue of \$175,000,000 of 25-year 3 1/4-percent debentures.)

In all published balance sheets of American Telephone & Telegraph Co. these 30 companies are in fact consolidated with it, apparently in view of the fact that the long lines department is operated as though it was one individual organization. This consolidation has no effect on the capital structure of the American Co. It merely results in a showing of more telephone plant and less investments than would be shown by strictly limiting the balance sheet to the American Co.

amount of telephone plant and equipment and the large amount of investments in subsidiaries and other companies as compared with the Bell System consolidated balance sheet, table 22. The American Co.'s participation in telephone operations in the United States is principally through its financial interest in the associated companies.

The tabulation below is a summarization of the capital structure portion of table 23:

	Amount	Percent of total
Capital stock, installments, and premium.....	\$2, 139, 307, 000	75.3
Surplus.....	248, 404, 000	8.7
Capital-stock equity.....	2, 387, 711, 000	84.0
Long-term debt.....	454, 555, 000	16.0
Total capitalization.....	2, 842, 266, 000	100.0

TABLE 23.—Balance sheet ¹ of American Telephone & Telegraph Co. as of Dec. 31, 1935

Item	Particulars (a)	Amount (b)	Percent of total (c)
ASSETS			
	Telephone plant and equipment:		
1	Book cost.....	\$436, 344, 242	
2	Less depreciation reserve.....	95, 040, 546	
3	Net book cost.....	\$341, 303, 696	11.77
4	Investments in associated telephone companies.....	2, 131, 489, 052	73.48
5	Other investments.....	191, 067, 008	6.59
6	Sinking funds.....	1, 202, 573	.04
7	Current assets.....	233, 968, 131	8.06
8	Deferred debits.....	1, 686, 878	.06
9	Total assets.....	2, 900, 711, 333	100.00
LIABILITIES			
	Capital stock:		
10	Stock issued and outstanding.....	1, 866, 227, 500	64.34
11	Premiums on capital stock.....	268, 749, 078	9.26
12	Capital-stock installments.....	4, 330, 337	.15
13	Total capital stock.....	2, 139, 306, 915	73.75
	Long-term debt:		
14	Bonds and miscellaneous notes.....	443, 532, 600	15.29
15	Notes sold to trustees of pension funds.....	11, 022, 113	.38
16	Total long-term debt.....	454, 554, 713	15.67
17	Current and accrued liabilities.....	56, 670, 536	1.95
18	Deferred credits.....	1, 775, 453	.06
19	Surplus reserved.....	64, 664, 444	2.23
20	Unappropriated surplus.....	183, 739, 272	6.34
21	Total liabilities.....	2, 900, 711, 333	100.00

¹ This is, in fact, a consolidated balance sheet, consolidating the accounts of American Telephone & Telegraph Co. and its 30 nonoperating State subsidiary companies which are maintained in connection with the long lines department. It is published by American Co. with no reference to that fact.

Source: Annual Report to Stockholders of American Telephone & Telegraph Co. for 1935, pp. 24 and 25.

The capitalization of the American Co. alone shows a greater preponderance of equity interest than does that for the consolidated Bell System, 84 percent capital-stock equity and 16 percent long-term debt making up the capitalization of the American Co. as compared with 73 percent and 27 percent, respectively, for the Bell System. The shift to stock equity results, of course, from dropping the associated companies' figures which account for slightly more than one-half of the long-term debt of the system but for less than 9 percent of the capital-stock equity relating to the shares held by the public.

It is evident that the parent company of the Bell System has a capital structure which contains a very large proportion of equity capital. Both its capital structure and that of the Bell System as a whole, are such that interest charges are a smaller proportion of current income than in almost any other public-utility enterprise.

Associated Bell Telephone Companies.

The balance sheets as of December 31, 1935, of each of the associated companies are given in tables 24 and 25. Depreciation reserves have been treated as deductions from telephone plant and equipment in order the more clearly to show capital structure as previously explained. On this basis the associated companies had total assets of \$3,230,000,000, and the depreciation and amortization reserves deducted from telephone plant and equipment were \$966,600,000, equivalent to over 25 percent of the recorded gross book cost of the plant and equipment. New York Telephone Co. possessed the largest amount of total assets of any associated company, with \$605,700,000, or 18.75 percent of the total. The Pacific Telephone & Telegraph Co., including its associated companies, Southern California Telephone Co. and Bell Telephone Co. of Nevada, accounted for \$349,500,000, or 10.82 percent of the total assets. Southwestern Bell Telephone Co. was next in line with \$331,600,000, which represented 10.27 percent of the total assets of all associated companies. On the net book cost basis, three other associated companies were not so far from the same size, the Bell Telephone Co. of Pennsylvania, New England Telephone & Telegraph Co., and Illinois Bell Telephone Co. accounting for 8.14, 7.84, and 7.43 percent, respectively, of the total assets. The smallest associated company, in terms of net book cost of assets, was the Diamond State Telephone Co., which serves the State of Delaware, with \$7,400,000, or 0.23 percent of the total. The Bell Telephone Co. of Nevada, combined in the tables with its parent, Pacific Telephone & Telegraph Co., is slightly smaller than Diamond State, making it the smallest of the associated companies.

Table 24 shows the composition of total assets among the usual broad classifications on a percentage basis. As would naturally be expected, almost 90 percent of the total assets is represented by telephone plant and equipment.

TABLE 24.—Assets of associated Bell Telephone companies as of Dec. 31, 1935

Item	Name of company (a)	Total		Telephone plant and equipment ¹				Invest- ments in affili- ated com- panies	Miscel- laneous physical property invest- ments	Sinking funds	Current assets		Prepaid items and deferred debts
		Amount (b)	Per- cent (c)	Book cost (d)	Less de- preciation and amor- tization reserve (e)	Net book cost (f)	(g)				Cash, deposits, and tem- porary cash in- vestments (i)	Other current assets ² (k)	
1	New England Telephone & Telegraph Co.	\$253,291,216	7.84	\$306,439,884	\$75,913,939	\$230,525,945	\$1,331,894	\$5,007,617	---	---	\$1,592,339	\$10,457,957	\$4,405,564
2	The Southern New England Telephone Co.	65,802,754	2.04	79,221,865	17,717,269	61,504,596	---	881,541	---	---	729,724	2,473,208	213,625
3	New York Telephone Co.	605,706,114	18.75	754,444,448	239,155,601	525,288,847	28,389,738	15,285,264	---	\$896,003	5,272,501	28,677,016	1,983,145
4	New Jersey Bell Telephone Co.	165,355,886	5.12	197,234,493	47,480,941	149,753,552	---	7,869,871	---	---	874,650	6,313,069	554,735
5	The Bell Telephone Co. of Pennsylvania	262,790,195	8.14	310,053,595	65,370,879	244,682,716	---	3,136,172	---	---	1,583,037	9,100,415	2,928,789
6	The Diamond State Telephone Co.	7,414,858	.23	8,395,551	1,521,257	6,874,294	---	180,369	---	---	38,404	286,248	35,500
7	The Chesapeake & Potomac Telephone Co.	29,921,375	.93	37,564,359	9,679,884	27,884,475	---	45,019	---	---	124,451	1,691,024	176,406
8	The Chesapeake & Potomac Telephone Co. of Baltimore City	39,526,324	1.22	50,037,355	12,603,029	37,434,356	---	56,130	---	---	164,623	1,634,097	236,518
9	The Chesapeake & Potomac Telephone Co. of Virginia	29,738,817	.92	33,541,144	5,762,439	27,788,705	---	255,594	---	143,757	100,648	1,180,425	209,688
10	The Chesapeake & Potomac Telephone Co. of West Virginia	21,431,968	.66	24,752,281	4,358,528	20,393,753	---	103,982	---	---	117,017	741,439	75,777
11	Southern Bell Telephone & Telegraph Co.	204,087,803	6.32	234,571,223	55,749,928	178,821,295	---	750,792	---	---	11,371,383	8,290,195	1,277,091
12	The Ohio Bell Telephone Co.	153,791,532	4.76	169,043,814	29,010,428	140,033,386	---	3,975,776	---	---	2,697,939	5,767,235	1,130,846
13	The Cincinnati & Suburban Bell Telephone Co.	34,617,548	1.07	39,515,900	11,902,216	27,613,684	---	32,937	---	---	5,645,991	1,111,914	56,676
14	Michigan Bell Telephone Co.	147,322,982	4.56	172,982,972	33,707,106	139,275,866	---	1,920,346	---	---	361,538	5,483,914	287,691
15	Indiana Bell Telephone Co.	44,519,595	1.38	46,801,416	6,417,318	40,384,098	---	1,462,597	---	---	144,998	2,222,083	118,725
16	Wisconsin Telephone Co.	57,129,502	1.77	78,495,366	25,682,304	52,813,062	---	384,873	---	---	1,508,601	2,343,820	78,744
17	Illinois Bell Telephone Co.	240,121,502	7.43	298,214,296	83,335,692	214,878,604	---	2,078,942	---	---	9,098,986	11,365,691	723,660
18	Northwestern Bell Telephone Co.	114,583,836	3.55	132,809,938	37,674,762	95,135,176	13,480,430	641,758	---	---	588,697	4,307,401	420,374
19	Southwestern Bell Telephone Co.	331,623,918	10.27	328,044,426	78,418,723	249,625,703	4,357,978	9,214,853	---	---	250,000	54,298,058	3,907,261
20	The Mountain States Telephone & Telegraph Co.	71,793,155	2.22	96,652,905	29,117,000	67,535,905	---	63,855	---	---	661,480	2,950,794	265,229
21	The Pacific Telephone & Telegraph Co. and its associated companies	349,508,898	10.82	431,445,229	105,980,321	325,464,908	---	13,375	---	---	2,289,386	13,093,117	4,720,645
22	Total	3,230,058,376	100.00	3,890,232,413	995,609,564	2,894,622,849	50,740,686	59,637,127	---	---	3,495,882	99,264,460	129,461,787
23	Percent of total assets	100.00	---	---	---	88.65	1.57	1.85	---	0.11	3.07	4.01	0.74

¹ Includes intangible capital and construction work in progress.² Intercompany accounts receivable have not been eliminated.³ Includes \$44,000,000 cash deposited with trustees on account of bonds called for redemption on Feb. 1, 1936.

Source: Form M, annual reports filed with the Federal Communications Commission.

TABLE 25.—Liabilities of associated Bell Telephone companies as of Dec. 31, 1935

Item	Name of company (a)	Total		Capital stock		Premium (or dis- count) on capital stock	Funded debt	Advances from American Telephone & Tele- graph Co.	Notes sold to trustees of pension funds	Current li- abilities, deferred credits, and miscella- neous re- serves 1	Surplus 2
		Amount (b)	Per- cent (c)	Common (d)	Preferred (e)						(k)
1	New England Telephone & Telegraph Co.	\$253,301,216	7.84	\$132,345,800	-----	-----	\$77,000,000	\$19,750,000	\$3,127,415	\$5,496,413	\$8,571,568
2	The Southern New England Telephone Co.	65,802,754	2.04	40,000,000	-----	\$135,539	11,000,000	6,050,000	2,215,954	2,026,757	3,772,804
3	New York Telephone Co.	605,706,114	18.76	421,300,000	-----	14,440,365	62,446,525	10,500,000	24,927,585	19,144,988	27,947,706
4	New Jersey Bell Telephone Co.	165,555,995	5.12	120,395,200	\$25,000,000	-----	-----	20,154,800	6,676,037	4,453,538	4,676,011
5	The Bell Telephone Co. of Pennsylvania	262,790,195	8.14	110,000,000	20,000,000	771,226	96,705,700	825,000	10,943,684	10,450,472	13,190,163
6	The Diamond State Telephone Co.	7,414,558	2.23	5,000,000	-----	1,764	-----	435,000	228,378	10,375,522	942,894
7	The Chesapeake & Potomac Telephone Co.	29,921,375	.93	20,000,000	-----	-----	-----	1,770,000	1,867,249	1,555,000	4,728,436
8	The Chesapeake & Potomac Telephone Co. of Balti- more City	39,526,324	1.22	30,000,000	3,000,000	15,419	-----	575,000	1,003,545	1,601,523	2,937,837
9	The Chesapeake & Potomac Telephone Co. of Virginia	29,733,817	.92	18,000,000	-----	-----	4,065,700	3,900,000	832,964	1,197,569	1,702,524
10	The Chesapeake & Potomac Telephone Co. of West Vir- ginia	21,431,948	.66	16,200,000	-----	-----	61,328,000	2,025,000	780,917	1,005,785	1,470,266
11	Southern Bell Telephone & Telegraph Co.	204,067,803	6.32	124,990,000	-----	-----	-----	-----	3,622,000	8,525,737	5,312,466
12	The Ohio Bell Telephone Co.	153,761,532	4.76	130,000,000	-----	-----	-----	-----	3,481,916	7,256,437	13,028,179
13	The Cincinnati & Suburban Bell Telephone Co.	34,617,548	1.07	27,488,400	-----	72,756	-----	-----	1,387,107	2,431,106	3,288,179
14	Michigan Bell Telephone Co.	147,322,952	4.56	110,000,000	-----	-----	1,314,300	20,774,730	4,949,173	6,597,018	3,687,101
15	Indiana Bell Telephone Co.	44,619,695	1.39	33,000,000	-----	-----	-----	5,734,363	1,715,199	2,305,801	1,764,432
16	Wisconsin Bell Telephone Co.	57,129,100	1.77	40,000,000	4,947,000	588	-----	-----	3,180,544	4,448,424	4,543,544
17	Illinois Bell Telephone Co.	240,121,502	7.43	150,000,000	-----	19,578	45,000,000	-----	7,201,145	17,980,098	19,940,772
18	Northwestern Bell Telephone Co.	114,653,836	3.55	95,000,000	4,800,800	14,011	168,000	950,000	5,413,865	5,205,999	3,031,161
19	Southwestern Bell Telephone Co.	331,623,918	10.27	173,000,000	21,785,500	915	44,136,000	-----	7,888,520	64,964,522	19,837,360
20	The Mountain States Telephone & Telegraph Co.	71,793,155	2.22	48,049,700	-----	78,574	-----	13,900,000	3,408,270	4,135,075	2,221,327
21	The Pacific Telephone & Telegraph Co. and its associ- ated companies	349,508,896	10.82	180,500,000	82,000,000	(4,817,811)	58,032,000	-----	13,082,249	14,858,278	5,854,182
22	Total	3,230,058,376	100.00	2,026,278,100	162,033,300	10,733,923,461	222,225	115,343,923	114,415,925	186,937,997	152,092,963
23	Percent of total liabilities	100.00	-----	62.73	5.02	0.33	14.28	3.60	3.54	5.79	4.71

1 Intercompany accounts payable have not been eliminated.

2 Includes surplus reserved for possible rate refunds.

3 Includes \$1,278,430 consisting of \$43,536,600 principal amount and \$2,441,830 premium payable on bonds called for redemption on Feb. 1, 1936.

4 Represents discount on capital stock.

Source: Form M, annual reports filed with the Federal Communications Commission.

The tabulation below is a summarization, for the associated companies combined, of the capital structure portion of table 25:

	Amount	Percent of total
Capital stock equity:		
Common stock.....	\$2,026,278,000	66.6
Preferred stock.....	162,633,000	5.3
Premium on capital stock.....	10,734,000	.4
Surplus.....	152,093,000	5.0
Total capital stock equity.....	2,351,138,000	77.3
Long-term debt:		
Funded debt.....	461,222,000	15.1
Notes sold to trustee of pension funds.....	114,416,000	3.8
Advances from American Telephone & Telegraph Co.....	116,344,000	3.6
Total long-term debt.....	691,982,000	22.7
Total capitalization.....	3,043,120,000	100.0

Approximately 77 percent of the combined capitalizations of the associated companies as of December 31, 1935, was represented by stock equity, principally common stock, of which \$1,895,000,000¹³ par value out of \$2,025,000,000, or 93 percent, was held by American Telephone & Telegraph Co. The balance of about 23 percent of the combined capitalization was represented by long-term debt, which includes advances from the American Co. These advances have, in the past, usually been converted into common stock.

Table 25 shows that a number of the associated companies were more conservatively capitalized than is indicated by the figures for the companies as a whole. Eleven¹⁴ of the 23 associated companies had no funded debt at the end of 1935. Some of these companies had no advances from American Co., so the only debt obligations included in their capital structures were the comparatively small amount of notes sold to trustee of pension funds. The Ohio Bell Telephone Co. is an example of high stock equity in capitalization, with 97.6 percent of its capitalization being represented by common shareholders' equity.

New England Telephone & Telegraph Co. and Bell Telephone Co. of Pennsylvania have the largest proportions of long-term debt in their capitalizations. The former, as of December 31, 1935, had 42.7 percent of its capitalization represented by long-term debt. This included a substantial amount of advances from American Telephone & Telegraph Co., most of which were, however, later liquidated (in 1938) from the proceeds of additional funded debt incurred. The Pennsylvania Co.'s long-term debt amounted to 42.9 percent of its total capitalization.

Bell System on Basis of Current Financial Statements.

As previously stated, beginning with the year 1936, the American Co. changed the basis of its consolidated financial statements by eliminating from the consolidation the two associated companies, the Southern New England Telephone Co. and the Cincinnati & Suburban Bell Telephone Co., in which it does not own a controlling capital stock interest, and including four additional indirect subsidiaries,

¹³ See Annual Report to Stockholders of American Telephone & Telegraph Co. for 1935, p. 27.

¹⁴ The 10 companies shown on table 25 and Bell Telephone Co. of Nevada, which is combined with its parent, Pacific Telephone & Telegraph Co., had no funded debt.

Christian-Todd Telephone Co., the Tri-State Telephone & Telegraph Co., Dakota Central Telephone Co., and the United Telephone Co. The smaller telephone subsidiaries and the subsidiaries not engaged in furnishing telephone service are not consolidated, and the Bell System's investments in these companies are shown in the consolidated balance sheet as "Investments in subsidiaries not consolidated" at the equity in these companies. A consolidated balance sheet of the Bell System, on this basis, as of December 31, 1937, is presented in table 26.

The capitalization of the Bell System, as reflected in table 26, is summarized below:

	Amount	Percent of total
Capital stock equity:		
American Co.:		
Common stock and premium.....	\$2, 138, 654, 000	58.8
Surplus applicable.....	334, 550, 000	9.2
Total.....	2, 473, 204, 000	68.0
Principal telephone subsidiaries:		
Common stock.....	85, 799, 000	2.3
Surplus applicable.....	3, 318, 000	.1
Preferred stock.....	65, 140, 000	1.8
	154, 257, 000	4.2
Total capital stock equity.....	2, 627, 461, 000	72.2
Long-term debt:		
American Co.	441, 060, 000	12.1
Principal telephone subsidiaries.....	569, 949, 000	15.7
Total long-term debt.....	1, 011, 009, 000	27.8
Total capitalization.....	3, 638, 470, 000	100.0

TABLE 26.—Consolidated balance sheet of American Telephone & Telegraph Co.¹ and its principal telephone subsidiaries as of Dec. 31, 1937

Item	Particulars (a)	Amount (b)	Percent of total (c)
	ASSETS		
1	Telephone plant and equipment:		
2	Book cost..... \$4, 389, 548, 887		
	Less depreciation reserves..... ² 1, 198, 516, 028		
3	Net book cost.....	\$3, 191, 032, 859	82.68
4	Investments in subsidiaries not consolidated.....	219, 190, 150	5.68
5	Other investments.....	³ 99, 788, 319	2.59
6	Sinking funds.....	2, 076, 693	.05
7	Current assets.....	317, 508, 324	8.23
8	Deferred debits.....	29, 696, 689	.77
9	Total assets.....	3, 859, 293, 034	100.00
	LIABILITIES		
	Capital stock:		
10	American Telephone & Telegraph Co.:		
	Capital stock outstanding.....	1, 868, 679, 400	48.42
11	Premiums on capital stock.....	269, 975, 028	7.00
12	Capital-stock installments.....		
13	Total, American Co.....	2, 138, 654, 428	55.42

¹ Includes its 30 nonoperating State subsidiary companies which are maintained in connection with the long lines department.

² Includes \$3,247,109 of amortization reserves.

³ Includes \$25,074,810 for miscellaneous physical property.

TABLE 28.—*Consolidated balance sheet of American Telephone & Telegraph Co. and its principal telephone subsidiaries as of Dec. 31, 1937—Continued*

Item	Particulars (a)	Amount (b)	Percent of total (c)
	LIABILITIES—continued		
	Capital stock—Continued.		
	Principal telephone subsidiaries:		
14	Common stock held by public.....	\$85,798,853	2.22
15	Preferred stock held by public.....	65,140,450	1.69
16	Total, principal telephone subsidiaries.....	150,939,303	3.91
17	Total, capital stock.....	2,289,593,731	59.33
	Long-term debt:		
	American Telephone & Telegraph Co.:		
18	Bonds and miscellaneous notes.....	430,170,700	11.15
19	Notes sold to trustee of pension funds.....	10,889,266	.28
20	Total, American Co.....	441,059,966	11.43
	Principal telephone subsidiaries:		
21	Bonds and miscellaneous notes.....	441,338,480	11.44
22	Notes sold to trustee of pension funds.....	128,610,191	3.33
23	Total, principal telephone subsidiaries.....	569,948,671	14.77
24	Total, long-term debt.....	1,011,008,637	26.20
25	Current and accrued liabilities.....	216,824,542	5.62
26	Deferred credits and miscellaneous reserves.....	3,968,263	.10
27	Surplus of principal telephone subsidiaries applicable to their capital stocks held by public.....	3,317,751	.08
	Consolidated surplus applicable to capital stock of American Telephone & Telegraph Co.:		
28	Surplus reserved.....	85,303,237	2.21
29	Unappropriated surplus.....	249,246,873	6.46
30	Total liabilities.....	3,859,293,034	100.00

Source: Annual Report to Stockholders of American Telephone & Telegraph Co. for 1937, pp. 16 and 17.

Although the relative proportions of the Bell System's total capitalization, as of December 31, 1937, on the revised basis of consolidation, represented by capital-stock equity and long-term debt do not differ materially from the percentages shown for the American Co. and the associated telephone companies consolidated as of December 31, 1935, the proportion of the total capitalization represented by capital-stock equity of the American Co. has increased almost 2 percent. This change was caused principally by the elimination from the consolidation of the Southern New England and Cincinnati & Suburban Cos., which have capital-stock equity relating to shares held by the public of approximately \$50,000,000, and by redemptions by certain of the subsidiary associated telephone companies of preferred stock outstanding at December 31, 1935, as follows:

Name of company	Year redeemed	Par value
New York Telephone Co.....	1937	\$25,000,000
Northwestern Bell Telephone Co.....	1937	4,800,800
The Chesapeake & Potomac Telephone Co. of Baltimore City.....	1936	3,000,000
Total.....		32,800,800

These items also account for the major part of the decline in the total capitalization of the Bell System as of December 31, 1937, as compared with the amount shown as of December 31, 1935, on the former basis of consolidation.

Western Electric Co., Inc.

The balance sheet of Western Electric Co., Inc., as of December 31, 1937, is given in table 27. Its capital structure is summarized in the following tabulation:

	Amount	Percent of total
Capital stock.....	\$142,500,000	74.6
Surplus.....	15,351,000	8.0
Capital stock equity.....	157,851,000	82.6
Long-term debt.....	33,174,000	17.4
Total capitalization.....	191,025,000	100.0

The composition of the capital structure of Western Electric Co. does not differ greatly from that of the parent American Telephone & Telegraph Co. The long-term debt is made up almost entirely of notes sold to the trustee of the pension fund, and they represent practically all of the capitalization held outside the Bell System, over 99 percent of the common stock being held by American Co.

TABLE 27.—Balance sheet of Western Electric Co., Inc., as of Dec. 31, 1937

Item	Particulars (a)	Amount (b)	Percent of total (c)
ASSETS			
1	Plant.....	\$141,050,610	
2	Less: Reserve for depreciation.....	77,976,658	
		63,073,952	29.04
3	Investments in subsidiary and associated companies.....	49,437,209	23.23
4	Other investments.....	5,747,534	2.70
5	Deferred receivables, less reserves.....	509,396	.24
6	Current assets.....	93,690,744	44.03
7	Prepaid insurance and rent.....	340,843	.16
8	Total assets.....	212,805,678	100.00
LIABILITIES			
Capital stock (6,000,000 shares without par value):			
9	Cash paid in by stockholders ¹	141,000,000	66.26
10	From surplus.....	1,500,000	.70
11	Total capital stock.....	142,500,000	66.96
Long-term debt:			
12	Notes sold to trustee of pension funds.....	32,341,521	15.20
13	Other notes payable.....	832,984	.39
14	Total long-term debt.....	33,174,505	15.59
15	Current and accrued liabilities.....	21,324,823	10.02
16	Miscellaneous reserves.....	455,800	.22
17	Surplus.....	15,350,550	7.21
18	Total liabilities.....	212,805,678	100.00

¹ This terminology is from the report of the company referred to below. The composition of the amount is summarized in exhibit 2090-A, table 35, p. 140. It is also discussed, *infra*, p. 588.

Source: Annual Report to Stockholders of Western Electric Co., Inc., for 1937, pp. 8 and 9.

CHAPTER 4 ✓

MANAGEMENT AND CONTROL¹ OF THE BELL SYSTEM

Investigation of the Bell Telephone System has not been limited to an observation of its corporate policies and practices, but has been carried beyond the outward evidences of its business policy and into a study of its functional organization, to consider the nature and identity of ultimate influences over the central management responsible for its individual corporate activities, and to evaluate the scope and completeness of control by that central management over the national telephone service.

SECTION 1. MANAGEMENT AND CONTROL OF THE AMERICAN CO. AND ITS PREDECESSORS

In this section, a brief review of the principal management personnel of the American Co. and its predecessors is presented historically, followed by a more detailed discussion of the circumstances and conditions prevailing at the time when the present management organization originated and the methods by which its continuity has been maintained.

History of Management and Control (1875–1907).

The historical review covers the period up to 1907, when the present management regime originated and a considerable change in some of the policies previously followed by the American Co. was effected. This early period, from 1875 to 1907, logically breaks down further into two periods of distinctive characteristics: First, ownership management from 1875 to 1881, during which period the directors, officers, and their relatives held a majority of the outstanding voting stock; and second, the period following 1881 during which a majority of the outstanding voting stock was no longer owned by the directors, officers, and their relatives.

*Period of ownership management (1875–81).*²—On February 27, 1875, Alexander Graham Bell assigned two-thirds of all his rights to his existing and future patents to Gardiner G. Hubbard (who later became Bell's father-in-law), and one Thomas Sanders, in return for their agreement to finance the perfection, exploitation, and protection of those patents. In return, he was to receive one-third of the stock of a company which was to be organized for commercial exploitation of his inventions. On September 1 of the following year, Thomas A. Watson, a practical mechanic, was employed by Bell's two financial backers to aid Bell in devising and manufacturing the new instruments. Watson was to receive a 10-percent interest in the projected company, thereby reducing the interest of the other three to 30 percent each.³

¹ As used in this chapter "control" is not limited to "legally enforceable control."

² See exhibit 2096-A, pp. 12-21.

³ Copy of the agreement between the three original Bell associates is in exhibit 1360-C, appendix 1; and their agreement with Watson is reproduced as appendix 2 of that exhibit.

This Bell Patent Association, as the original group styled itself, was replaced by the Bell Telephone Co., an association formed under the laws of the State of Massachusetts on July 9 of the following year (1877) with 5,000 shares, issued in such proportions that Watson and Sanders retained their approximate original interest (9.98 percent and 29.94 percent, respectively), and the remaining 60.08 percent was in the hands of Gardiner G. Hubbard (27.74 percent), his son-in-law Bell (0.2 percent), his brother Charles (0.2 percent), his daughter Mrs. Mabel Hubbard Bell (29.94 percent), and his wife Gertrude (2 percent). In addition, the members of the original patent association had made an assignment of all their rights under four of Bell's patents to Gardiner Hubbard as trustee. Under this declaration of trust⁴ the management of the association's business was placed in the hands of Hubbard, as trustee, under the supervision and control of a board of managers of three to five members, consisting of the trustee and additional members to be elected by the members of the association from their number.

On February 12, 1878, this association incorporated the New England Telephone Co. to exploit the telephone in New England, with 2,000 shares of stock, of which 1,000 shares went to the original association, and 1,000 shares were turned over to G. L. Bradley for sale and brought in \$50,000 cash to the company. The new investors were fully represented on the board of directors of this New England Co. by C. S. Bradley, Alexander Cochrane, W. G. Saltonstall, and G. Z. Silsbee in addition to all the members of the original patent association except Bell, the inventor. On July 30, 1878, the original Bell Telephone Co. (which had existed as an association since July 9, 1877), was organized as a Massachusetts corporation having the same name, with 4,500 shares of stock. The new corporation acquired the patents and patent rights, and interests in all contracts relating thereto, then held by Hubbard as trustee of the association, for 3,000 shares of its stock; 1,000 shares were sold to Thomas Sanders for \$25,000, and the remaining 500 shares were sold to others for another \$25,000. The original officers of this corporation included Gardiner Hubbard as president and Sanders as treasurer. The original executive committee consisted of Hubbard, Sanders, and G. L. Bradley. By resolution of the directors this executive committee had "all such powers as may be necessary for the management of the company." These powers, which were delegated to the executive committee on July 20, 1878, were withdrawn by the directors on January 23, 1879.

In this manner the original association, managed by Hubbard, sold a one-half interest in its rights to the development of telephony in New England for \$50,000, and one-third of its rights to all telephone development outside New England for another \$50,000. Control of both companies apparently rested largely in the hands of those who had furnished the necessary new capital, including Sanders of the original group, and Bradley and his associates of the New England Telephone Co. group. This position was reinforced in the Bell Telephone Co. through an agreement by which the owners of that third of the outstanding stock which had been sold for \$50,000 (\$25,000 from Sanders for 1,000 shares, and \$25,000 from others for 500 shares) were

⁴ For copy, see *ibid.*, appendix 3.

to have equal voting power, for 2 years, with the other two-thirds represented by the inventor Bell, Sanders, and the promoter Hubbard.

A Boston inventor by the name of Francis Blake was admitted to the board of the Bell Telephone Co. in December 1878, upon his offer of an improved telephone transmitter of material aid to the Bell group in its early competition with the Western Union Telegraph Co., which was backing Edison's telephone inventions against those of Bell. At the same time, while the outcome of this competition was still in doubt, William H. Forbes, a man of considerable means, was elected to the board and assumed Sanders' role as principal financier. In effect, Hubbard, the promoter, was entrusted by the early Bell company owners with direction of the management; for a brief period, the management was placed in the hands of an executive committee consisting of Hubbard, Sanders, and Bradley; and Forbes then entered the organization and was placed in charge of its affairs.

Forbes and his associates immediately moved to unify and consolidate the Bell interests during their struggle with Western Union for control over the field of telephony, by merging the New England Telephone Co. and the Bell Telephone Co. into a new corporation, the National Bell Telephone Co., established March 13, 1879, with 8,500 shares of stock, 6,500 of which were exchanged share for share for that of the two former companies and the remaining 2,000 shares were sold later in the year for \$429,831.25 cash. Further insurance against dispersion or loss of control was secured by 18 large stockholders, representing a majority of stock of the new company, through an agreement among themselves not to sell stock or give voting proxies except to each other. This strongly concentrated control of the Bell group lasted until the conclusion of its competition with the Western Union Telegraph Co.⁶ and apparently afforded an excellent mechanism for a possible threat, against Western Union, to sell control of the Bell interest to Jay Gould, who at that time was attacking the Vanderbilt control of Western Union's telegraph field.⁶ During this competition for telegraph control, and before Vanderbilt was dislodged by Gould, the Western Union under Vanderbilt control compromised its competition with the Bell group, publicly admitting priority of Bell's patent claims and receiving in return an agreement preventing the telephone invention from being used in competition with Western Union's telegraph business.⁷ A month after this Western Union agreement was signed the 18 stockholders voluntarily released each other from their control agreement, though it still had some months to run.

Following this event, firmly establishing the position of the Bell group as a practical telephone monopoly during the life of its patents, funds were available from investors in almost unlimited quantities. The new company (American Bell Telephone Co.) formed to replace the National Bell Telephone Co. was capitalized at \$10,000,000, with 100,000 shares authorized. Of these shares, 73,500 were issued immediately, including 51,000 to the stockholders of the old company (on a 6-for-1 basis), 8,500 additional shares were sold to the old stockholders at par, and 14,000 shares were issued to Forbes and Richard S. Fay as trustees, subject to disposal by the directors of the

⁶ A detailed description of the elimination of this early competition is given in ch. 5.

⁶ For greater detail on the competition between Jay Gould and the Vanderbilts (William H. and Cornelius), and its relation to the field of telephony, see exhibit 2096-F, pp. 13-31.

⁷ The Bell Co. also took over Western Union's telephone patents and bought its telephone exchanges, agreeing to pay the latter one-fifth of all rentals received on telephone instruments. For the detailed provisions of this contract of November 10, 1879, see exhibit 1360-C, appendix 7.

old National Bell Co. Forbes and others of the later financial backers were at once elected directors of the American Bell; several months later Hubbard, Sanders, Bradley, and Cochrane, the earlier investors, likewise were elected directors. By December 8 of the first year (1880) of the American Bell Telephone Co.'s existence, the percentage of equity ownership of the Bell enterprise owned by the officers, directors, and family relations had been considerably reduced, but still constituted a majority (56.4 percent).⁸

*Management during early period of dispersion of stock ownership (1881-1900).*⁹—Following the Bell Co.'s agreement of November 10, 1879, with Western Union and the establishment of the Bell enterprise as a virtual patent monopoly, funds were readily obtained through sale of increasing amounts of stock, in order to meet the requirements of the rapidly expanding business. The wide investment appeal of the telephone patent monopoly is indicated by the rapid increase in number of its stockholders from less than 600 in 1881 to more than 6,000 in 1900, while outstanding stock increased over the same period from less than 60,000 to more than a quarter of a million shares. The distribution of stock among many small investors is indicated by the fact that the average shares per stockholder decreased, over this period, from 110.2 to 37.2. As a result, shortly after 1880 the officers, directors, and their relatives no longer owned a majority of the outstanding capital stock of the company.¹⁰

At the same time that the public was investing in the company in these increasing total numbers and decreasing individual amounts, the holdings of the board of directors were steadily decreasing, both in number of shares and as a percentage of the total outstanding. In 1881, 12 directors owned more than 13,000 shares, while in 1895, 13 directors owned less than 6,000 shares, a reduction in average holding of 58 percent, or from over 1,000 shares to less than 500 shares. As the company was plunged into open competition for the first time following 1894, and a strong financial group appeared ready to support the organization of competing companies in 1899 and 1900, these diminished holdings of the 13 directors were further sharply reduced, from more than 5,900 shares in 1895 to less than 2,200 shares in 1900. Over the entire period, 1881 to 1900, average holdings per director decreased from 1,098 to 169 shares. This decreasing average ownership was especially apparent in those directors with the largest holdings, including Bradley, Hubbard, and Forbes.¹¹

In effect, the stockholders collectively were placing or acquiescing in the placing of management of their corporation in the hands of a group of men who were gradually losing the characteristics of ownership and acquiring more nearly the characteristics of mere representatives of the owners.¹² In the absence of complete and intimate information on the company's prospects, the dividends the stockholders received probably constituted the most important single criterion of the excellence of their representatives, the directors. The record of dividends declared over this period must have been sufficiently liberal to satisfy the most exacting investor. Beginning in the early years with a 3-percent dividend in 1880, 7 percent in 1881, and 10 percent in 1882, the dividends increased to 18 percent for the 6-year period

⁸ See exhibit 2006-A, schedule 2.

⁹ See *ibid.*, pp. 22-24.

¹⁰ See *supra*, table 13, p. 50, and *ibid.*, appendix 2, sheet 5.

¹¹ See *ibid.*, appendix 2, sheet 8.

¹² In 1900 the 13 directors held 2,198 shares, or 0.9 percent of the outstanding stock.

1888 to 1893 and were held constantly at 15 percent for the remainder of the period 1894 to 1899. It is not illogical, therefore, that there should have been considerable continuity in the tenure of the directors over this period. Five of those on the 1881 directorate were still on the directorate two decades later, in 1900. A majority of those on the board in 1887 were still on the board, still constituting a majority, at the end of this 20-year period, 1881 to 1900. The increasing dispersion of stock among many small holders and the generous dividends declared by the board undoubtedly were strong factors in the continuance of that board in control of the company management, though their own total interest as stockholders had decreased steadily.

*Development of influence of investment bankers over management (1900-1907).*¹³—The years 1900 to 1907 constituted an important period in the history of control of the American Co., as well as of the entire communications industry. The Bell System's basic patent protection expired in 1894 and exposed the company to extensive competition. Rival telephone companies came into existence and grew so rapidly that by 1907 the independent and competing telephones constituted half of the country's total telephones. Moreover, their telephones, in total numbers, were increasing more rapidly than were those of the Bell System. Continuation of the then-existing trend destined the Bell System not only to lose its formerly profitable dominant position in the telephone field, but even threatened to relegate it to a minor role in the industry. During this period there was considerable competition between various banking interests for the role of financial sponsor for the American Co. in connection with its bond and note issues. Many of the details concerning this competition appear outside the official transactions and records of the American Co., and the plans sponsored by certain groups apparently indicated consideration of the possibility of obtaining financial control over the telephone industry. Considerable data on this competition is presented in a separate report¹⁴ and a brief review of these external matters is given at this point to afford a better understanding of the events occurring within the American Co.

In 1900 there were four separate groups in the electrical communications industry: The two telegraph companies (Western Union and Postal Telegraph completely occupied the telegraph field); the well integrated Bell Telephone System; and the unorganized but rapidly growing independent telephone companies. The then-prevailing tendency toward combination of the separate units of an industry into one unit controlling or dominating the field, as exemplified by the Standard Oil Co., General Electric Co., the United States Steel Corporation, and International Harvester Co., among others, also was reflected in the electrical communications industry, with its four focal points of a possible communications combination.

In this instance the apparent objective of those interested was to combine one of the two telegraph companies with one of the two telephone groups, to form a telephone-telegraph combination which would have distinct advantages over its remaining competitors. While the Bell System was progressively losing its relative position in the telephone field after 1894, an attempt was made to amalgamate

¹³ See exhibit 2096-A, pp. 32-66; and exhibit 2096-F, pp. 37-168.

¹⁴ Exhibit 2096-F.

the independent telephone companies into a nationally unified telephone group, under the auspices of the Telephone, Telegraph & Cable Co., with the suggested possibility of its later combination with the Western Union Telegraph Co. This attempt to unify and organize the independent telephone companies under one control failed in the period 1899 to 1902 when financially important members of its organizing group withdrew their support, during a compromise agreement between two important banking interests which simultaneously were engaged in a competition for control over the gas and electric utilities of New York City. There is evidence that one of these banking interests (the Stillman-Rockefeller group) had been more or less directly associated with the organizers of the independent telephone companies. The other (Baker-Morgan) was an opposing group whose further activities definitely were related to the possibility of obtaining control of the Bell System.

As early as 1902 some preliminary steps had been taken by the Baker-Morgan group to combine the Postal Telegraph Co. with the Bell System. Theodore N. Vail, an early employee of the Bell System,¹⁵ had made arrangements with John W. Mackay, founder and controlling factor in the Postal Telegraph Co., for a joint interest in a block of Bell stock which was placed in Vail's name prior to 1900. In March 1902, George F. Baker (president of the First National Bank of New York) and his associates bought 50,000 shares of American Co. stock.¹⁶ Baker's associates in this purchase included the firm of J. P. Morgan & Co. of New York, T. Jefferson Coolidge, Jr., president of the Old Colony Trust Co. of Boston, and John I. Waterbury, president of the Manhattan Trust Co. of New York. A stipulation made by the purchasers and accepted by the American Co.'s president was that Messrs. Baker and Waterbury were to be elected to the directorate of the company. Coolidge had been elected previously to the directorate of the American Co., in May 1900.¹⁷ At the same time that Baker and Waterbury went on the board, Theodore N. Vail was also elected a director, while holding some 3,800 shares of the company's stock in which John W. Mackay apparently held some interest. In July 1902, a few months after this purchase of stock and election of new directors, John W. Mackay died, and control of his properties passed to his son, Clarence H. Mackay. Subsequent correspondence between Clarence Mackay and Messrs. Coolidge and Waterbury, during a sharp difference of opinion between the younger Mackay and the two members of the banking group, revealed that Waterbury had carried on negotiations with the elder Mackay on plans for a Bell-Postal combination and that Coolidge and Waterbury had negotiated actively with Clarence Mackay in the development of such plans. Part of this plan was the consolidation of stock control over the several Mackay telegraph and cable companies through exchange of their voting stock for shares of a trust to be known as the Mackay

¹⁵ Vail had resigned as general manager of the parent Bell Co. some 15 years previously for the reason, among others as stated in his resignation, "My present position in the company is not such as I had hoped to attain and is also in some ways embarrassing and unpleasant." This was in 1885. Subsequently, in the same year, he was offered the presidency of the newly organized long-distance subsidiary (American Telephone & Telegraph Co.) which he retained until September 1887, when he resigned.

¹⁶ As stated in ch. 8, pp. 130-132, arrangements for this purchase of Bell stock, amounting to \$7,575,000 were concluded within 60 days after the Bell Co. had participated in the refinancing of a competitive telephone holding company which had borrowed \$9,000,000 through Coolidge's Old Colony Trust Co., on 1-year notes due in January 1902. This borrowing had become necessary when the competitive company's holding company, the Telephone, Telegraph & Cable Co., failed to receive the strong financial support it originally had anticipated.

¹⁷ T. J. Coolidge, Jr., had been a director of American Bell Telephone Co. since March 30, 1897.

Companies.¹⁸ This trust was established under the control of four trustees: Coolidge, Waterbury, Mackay, and Cook (Mackay's attorney). Mackay undertook the responsibility of gaining full stock control over his own companies, and it was his understanding that Coolidge and Waterbury, in turn, were to assume the responsibility of necessary steps to obtain control over the Bell Co. Mackay carried out his part of the assignment but later refused to aid Waterbury, Coolidge, and their associates in the plan they had devised for obtaining control over the Bell Co., as is shown later in this chapter.

Subsequent to the election of Messrs. Baker, Waterbury, and Vail to the American Co.'s directorate in 1902 considerable competition developed among several groups of investment bankers for the opportunity to underwrite public issues of securities of the American Co., particularly during the years 1904 and 1905. In 1904 the successful bidders were Lee, Higginson & Co., of Boston, associated with Speyer & Co., of New York. H. L. Higginson, senior member of the firm, had been one of the very early stockholders and financiers of the Bell Telephone prior to 1880, and his firm had continued to advise the Bell Co. on financial matters. This 1904 financing took the form of \$20,000,000 of 5-percent 3-year notes, due May 1, 1907. When the next year's financing came under discussion, the Higginson firm objected in strong terms, in a letter to the American Co., to being told that an offer of capital from them could not be considered and that the opportunity was to be reserved exclusively for another. On the other hand Waterbury had suggested to the American Co. a plan whereby the group of bankers which he represented would purchase \$85,000,000 of the Bell Co.'s bonds convertible into voting stock, with an option to purchase an additional \$50,000,000 of securities. No provision was made in this plan for offering these convertible bonds to the company's stockholders. Coolidge suggested to Clarence Mackay that the Mackay Companies participate to the extent of \$37,500,000 in underwriting this \$135,000,000 issue, which Mackay considered too large an individual responsibility for the Mackay Companies to undertake, and refused. The refusal of the Mackays to join in this underwriting resulted in a sharp dissension between the Mackays and the bankers' representatives Waterbury and Coolidge.¹⁹ Following Mackay's refusal to underwrite \$37,500,000 of the proposed \$135,000,000 purchase of Bell securities, the Mackay interests (Postal Telegraph) were eliminated from these plans for a telephone-telegraph communications merger, and Western Union

¹⁸ Coolidge referred to the origin and purposes of this organization of the Mackay Companies in a letter to Waterbury, dated March 30, 1905, in which he said, "The form of organization of the companies was suggested by me to you, Mr. Cook, Mr. Waterbury, and I think, Mr. Ward, at one of our early meetings, and after careful consideration we decided to form the Mackay Companies, for the protection of your interests and the interests of other stockholders of the Commercial Cable Co. against possible loss of control by purchase of a bare majority by the Gould, or Rockefeller, or any adverse interest." See exhibit 2096-F, pp. 80-82.

¹⁹ After this dissension arose between the Mackays and Messrs. Coolidge and Waterbury, the Mackay Companies proceeded to purchase American Co. stock in the open market and, after it had acquired over 70,000 shares and held almost 4 times as much stock as any other stockholder, it demanded representation on the company's board of directors. When this was refused as demanded (3 directors were requested and 1 only offered) Clarence Mackay, son of John W. Mackay, demanded that Vail resign from his position as representative of the Mackay stock holdings in the American Co. Vail then disclaimed any responsibility for representing the younger Mackay, stating that the individual interest in certain of the shares in his name was a personal matter between himself and Mackay, or the estate of the elder John W. Mackay, who had died a few months after Vail's election to the board. See exhibit 2096-F, pp. 85-97.

later was selected to replace Postal.²⁰ This early financing plan proposed by the banking group, including the issuance of a large block of bonds convertible into stock, also was refused when presented to the management of the American Co. The unanimous opinion of the holding company's counsel, treasurer, and vice president was contained in their letter to President Fish, in which was stated, in part:²¹

To our minds there is another risk in the proposed plan which should be had in mind. If a bankers' syndicate should be formed, under the proposed plan, who should pool their bonds or place them in trust, the trust so formed, by exercising the option given for the conversion of bonds, would have the power to acquire so near an absolute controlling interest in this company as practically to control the whole assets of the company, which they could use for any schemes of financing that they saw fit. In short, having nearly one-half of the entire issue of capital stock of the company, they could consolidate this company with other companies, or make any other arrangement in regard to its future financing that they saw fit. This is a great and extremely valuable option and is equivalent, until the bonds are distributed or sold to the public, to a surrender of the powers of management by the present officers and stockholders to a body of bankers who may work to the disadvantage of the present stockholders in the promotion of other schemes of consolidation.

Advice from others of his executive committee also being negative, President Fish refused this plan and accepted the suggestion of Lee, Higginson & Co., that the company's new securities be offered upon a competitive basis. In this competitive bidding Kidder, Peabody & Co., combined with Baring Bros. of London, both closely associated with J. P. Morgan & Co., submitted a bid well above that of other competitive bidders, including Lee, Higginson & Co., and Speyer & Co., and in consequence were awarded the 1905 financing. Shortly after this award Waterbury and Coolidge, two of Baker's associates in his 1902 purchase of 50,000 shares of American Co. stock, abandoned their connection with Mackay (Postal), who had refused to accept a 25-percent share in the earlier plan for underwriting Bell convertible bonds. In this sharp dissension between Mackay and the bankers, within 30 days after the award of Bell's 1905 financing to the above group of bankers following the company's refusal of the bankers' convertible bond plan, one of the banking group, Coolidge, wrote Mackay, saying, in part: ²²

I cannot quite agree with you that Mr. Waterbury and I did not present a plan with respect to acquiring an interest in the Telephone Co. Such a plan was presented by Mr. Waterbury, at considerable length in detail, and with the reasons why it was believed that the plan presented was the best that could be made and would afford the most satisfactory results in the speediest manner. You will recall quite a long discussion upon it at Mr. Waterbury's house, and that Mr. Cook and yourself—he very emphatically—opposed the plan, which involved taking an interest in a syndicate which was to acquire stocks and bonds

²⁰ Jay Gould's control of Western Union passed to his son George J. Gould. The latter became financially embarrassed in the period 1907 to 1909 and his bankers (Kuhn, Loeb) insisted upon the appointment of a standing committee (suggesting Cornelius Vanderbilt as one member) to approve all expenditures made from the proceeds of new financing, which Gould badly needed. In this same year the New York Telephone Co. (in which Gould's Western Union still owned approximately a one-third stock interest) issued a large amount of new stock, which would have required \$18,000,000 in cash from Western Union to take its proportionate share. Western Union was financially unable to do this. After some negotiations, Western Union sold its New York company stock to the American Co. Later that year the Gould control of Western Union was acquired by the American Co. by purchase of 30 percent of its outstanding stock. Mackay attacked the Bell Co.'s subsequently alleged attempts to divert all telephoned telegrams to Western Union, charging violation of the antitrust laws. Attorney General McKeynolds, to whom these complaints were made, took no direct action, but referred the matter to the Interstate Commerce Commission early in 1913. The latter immediately undertook a thorough investigation, whereupon the American Co., through the Kingsbury commitment, agreed, among other things, to dispose of its stock holdings in Western Union. For further details on this Kingsbury commitment, see ch. 5.

²¹ Letter to President Fish dated February 16, 1905, signed by George V. Leverett, Thomas Sherwin, and William R. Driver.

²² Letter from Coolidge to Mackay dated March 30, 1905. The complete letter will be found in exhibit 2096-A, appendix 7, sheets 2-4.

in financing the Telephone Co., and that I argued at considerable length the advantages which would follow should we act favorably upon the plan proposed, and the very slight risk, if any, that would be run by the Mackay companies in authorizing us to proceed to carry it into effect. You and Mr. Cook opposed it, and the matter was dropped. The first step in financing has since been carried out successfully and without the Mackay companies participating in it.

Later in the same year (August 1905) President Fish of the American Co. again was approached by Waterbury with a plan for convertible-bond financing, but was given no encouragement by Fish. The latter sailed later that month for a vacation abroad, returning in October. Later correspondence indicated that Fish had discussed the company's financing plans while in London.²³

By the first of the month, following Fish's return from abroad, the company's attorneys had prepared and presented their opinion in reply to President Fish's question as to the votes required to be passed by the stockholders to authorize the issue, by the directors, of convertible bonds and preferred stock. The company's correspondence records reviewed show no further objection on the part of the president or executive committee to the previously rejected plan of financing through convertible bonds. A draft of the circular letter prepared for distribution to the stockholders, explaining the necessity for their authorization to issue convertible bonds, was submitted by President Fish to Messrs. Waterbury and Baker, who offered advice upon its organization and contents. The issue of convertible bonds was approved at a subsequent stockholders' meeting. As is described more in detail later in this chapter, for this meeting the company mailed to its stockholders proxy forms which were printed in such manner that no opportunity was given the stockholder for substitution of proxy names in place of those indicated and printed on the form. The vote giving the required authority was passed at this stockholders' meeting, though the files of the company contain more letters of protest from stockholders on this proposed action than on any other stockholders' meeting it had ever held.

The convertible-bond issue subsequently was prepared, consisting of \$150,000,000 of bonds convertible into stock at 140 after March 1, 1909. Unlike bond and note issues sold previously, no competitive bids were accepted by the company. No information was obtained from the company's records showing the necessity for thus dealing exclusively with one group of bankers while others were requesting an opportunity to be allowed to compete or participate in furnishing the company its capital requirements. The method of meeting the objection to noncompetitive bidding, as formerly voiced so strongly by the Lee, Higginson firm, was indicated in a letter which Crane, a member of the executive committee, wrote to President Fish on January 27, 1906 (referring to Mr. Storrow of the Lee, Higginson firm), in which he stated, in part:

Mr. Storrow called on me at the hotel last evening. From what he said I judged that he and his friends would be quite well satisfied with a two-thirds' interest in the proposed syndicate providing Mr. Morgan would withdraw his objections to Mr. Speyer.

²³ Edgar Speyer cabled Fish on December 8, 1905, saying, in part: "Referring to our London conversation think your company should not let this opportunity pass without trying arranging combination 2 important banking groups view creating good international market." Fish replied, stating, in part: "I was very glad to receive your cablegram and to know that you are of the same mind as when I had the pleasure of talking with you last September." J. P. Morgan later made personal objection to inclusion of Mr. Speyer and no evidence was found showing that the Speyer firm participated in any of the company's subsequent financing, although the Lee, Higginson firm joined the bankers' syndicate.

The bonds were awarded to a syndicate under an agreement dated February 8, 1906, between the company and J. P. Morgan & Co.; Kuhn, Loeb & Co.; Kidder, Peabody & Co.; and Baring Bros. & Co., Ltd., of London. Another agreement between these bankers and the subscribers to the syndicate, dated February 15, 1906,²⁴ contained provisions by which the bankers retained complete control over the bonds even after they were subscribed and paid for, until the dissolution of the syndicate. As most of the bonds were unsold during the next 2 years and the syndicate was not terminated until June 1908, these provisions obviously gave the bankers sole control over the bonds and any rights that inhered in them. It should be noted that the bonds were not convertible into stock until almost 9 months after dissolution of the syndicate. However, before this control over the convertible bonds was dissipated through dissolution of the syndicate the company's management personnel was changed, with Vail taking the place of Fish as president, subsequent to the presentation of recommendations by a "reorganization committee."

Early in 1907 Waterbury proposed the appointment of this "reorganization committee" and this proposal was transmitted to Fish by Crane, a member of the executive committee. The latter also suggested that the committee be composed of Messrs. Coolidge, Waterbury, Baker, and Vail. These recommendations, with the addition of Crane to the committee, were adopted. Of these five members of the "reorganization committee," one (Crane) was the executive committee member who transmitted Waterbury's suggestion to President Fish, and four (Baker, Waterbury, Coolidge, and Vail) have been mentioned previously. Baker, Waterbury, and Vail came into the company's directorate at the time of Baker's original purchase of a 50,000-share block of the company's stock; Waterbury and Coolidge had negotiated with John W. Mackay for a Postal-Bell communications combination; Vail and John W. Mackay had been jointly interested in the ownership of Bell stock when Vail was elected a director, just prior to John W. Mackay's death, though Vail later disclaimed any responsibility to Mackay's son, Clarence Mackay, after Waterbury and Coolidge had severed their connection with the Mackay Companies; Waterbury had been a principal negotiator in presenting the banking syndicate's convertible bond plan, which was first refused but later accepted by the company to obtain its 1906-7 capital requirements; lastly, Baker was a major figure in the banking group itself.

Correspondence in the company's files indicates that an "outline organization" was submitted somewhat informally to Fish by Vail, acting for the reorganization committee, on February 21, 1907. At the annual stockholders' meeting a month later, March 26, 1907, all directors were reelected and by their action the executive committee members were continued in office and Fish was reelected president for the coming year. Three days after his reelection Fish apparently submitted "important suggestions" on the "outline organization" which previously had been presented to him by Vail, for the committee. Neither this original reorganization plan nor any indication of President Fish's "important suggestions" thereon have been found in the company's records. Subsequently, the reorganization committee, in a formal report signed by all of the members, recommended that the reorganization be carried out by the executive committee, whose

²⁴ See exhibit 2096-A, appendix 10, for copies of both these agreements.

members should first be increased by the election of two additional members. The executive committee then consisted of Messrs. Crane, Fish, Amory, Cochrane, and Howe. No record is available of the individual opinions of these five members on the reorganization plan, but the minutes of the meeting show that the recommendation to add two members to the executive committee was adopted. However, Messrs. Cochrane and Amory then resigned and Vail and Waterbury were elected in their stead. No further mention was made of the resolution to increase the committee from five to seven members. President Fish also resigned from the executive committee, from the presidency, and from the directorate, being replaced in the presidency by Vail, who then had an executive committee of but four, consisting of himself, Waterbury, Crane, and Howe. Each of these four continued to serve on the executive committee of the American Co. for the remainder of their lives. Howe, the last surviving member of this group, served until his death in 1931. The day after these moves were completed the \$20,000,000 notes to the Higginson-Speyer group became due and were paid from proceeds of the convertible bonds previously sold to the Baker-Morgan group. Immediately following this change in the company's management the Guaranty Trust of New York, which had served as stock registrar, maintaining the official record of the identity of ownership of the company's stock, was abruptly replaced by the Manhattan Trust, of which Waterbury was president.

Before the next annual election of directors, Vail proposed to his executive committee the election of additional directors to the board in a letter in which he stated, in part: ²⁵

It seems to me that we must, if any change is to be made, consider soon the names of some possible additions to our directorate. Personally, I think that it would be an exceedingly good plan if Mr. Winsor or some other of the leading members of the firm of Kidder, Peabody & Co., Mr. Henry L. Higginson, of Lee, Higginson & Co.; Mr. N. W. Harris, of the firm of N. W. Harris & Co.—brokers—and possibly Mr. J. P. Morgan, Jr., or Mr. Steele, of the firm of J. P. Morgan & Co., could be induced to join.

A number of other names were suggested to Vail by various stockholders, but he said concerning these: "I merely submit the latter names as I have been requested to by others." All of the men suggested personally by Vail were bankers, and all were associated with the banking group which had purchased the Bell Co.'s convertible bonds prior to Vail's installation as president.

The events of the period 1900-1907 indicate quite clearly that control over the company's management policies, through majority control over the members of the company's executive committee, was changed abruptly in 1907 under the influence of a group of investment bankers whose representatives had been actively interested in the early negotiations for a Postal-Bell combination in the electrical communications industry. ²⁶

Management Since 1907.

Although control over the company's management policies lay directly in the executive committee as delegated to it by the board of directors, the legal "right" of control rested in the board of directors,

²⁵ Letter from Vail to Crane, Howe, and Waterbury, dated February 4, 1903 (President's Private Letter-book No. 6). For copy see exhibit 206-A, appendix 13, sheet 3.

²⁶ Within 2 years this communications combination was consummated by the American Co.'s new management through acquisition of control over the Western Union Telegraph Co., as indicated in footnote 19, on p. 89, *supra*.

over which, in turn, the stockholders exercised the legal "right" to control, through election of directors by ballot at annual stockholders' meetings. The exercise of, or failure to exercise, these two legal "rights" is indicated by (1) the actual mechanics of the proxy method of election of directors, (2) the considerable degree of influence of the management, itself, in the selection and election of directors to whom they legally were presumed to be subordinates, and (3) in the management's selection and election of their own successors in executive office. The results of investigation on these subjects are presented in the succeeding parts of this section.

Further dispersion of stock ownership.—The ability to acquire and continue in possession of control over the company's policies through majority control of the executive committee, including the president, is effective in the degree to which there is no interference by the directors or by the stockholders. The actual operation of "proxy voting" in a corporation with a widely dispersed body of small stockholders, and the ability of the management officers to dictate the selection and election of both directors and their own successors, deserves close observation as a commentary upon the seat of ultimate control over the management policies and objectives of the American Co., and, with it, the control over their entire field of telephone communications.

Previous statement has been made of the dispersion of stock ownership over the period 1881-1900 when the number of stockholders increased from less than 600 to more than 6,000, while the average holdings of each stockholder declined from over 100 to less than 40. This trend was reversed for the several years following 1900 when formulation of plans involving possible acquisition of control over the company was in progress, and the average holdings per stockholder increased from 74.4²⁷ shares in 1900 to 79.1 in 1901, 91.3 in 1902, and 92.3 in 1903.²⁸ It was during this period that George F. Baker and his associates purchased 50,000 shares of the company's stock in a single transaction. The tendency toward dispersion again set in the following year. The dispersion as of the end of 1935 is indicated by the average holding per stockholder, which had declined to 28.1 shares. Entering into this 1935 figure of 28.1 shares were 244,566 stockholders with average holdings of but 2.87 shares each, and, at the other extreme, 43 stockholders of record with average holdings of 22,688 shares each. The holdings of these 43 stockholders of record, however, constituted less than 6 percent of the 18,662,275 outstanding shares, and the shares held by the 244,566 small stockholders represented less than 4 percent of the total outstanding shares.

The greater the total proportion of corporation stock scattered among a tremendously large number of stockholders, each with a very small individual holding, the smaller may be the block of stock in which working control may lie.²⁹ The voting proxy constitutes a relatively simple expedient by which an incumbent management may obtain the voting power of a block of stock so large that its combination with the holdings of a few large holders, acting and voting in common, constitutes complete working control of the company. The

²⁷ Equivalent number of American Co. shares to average of 37.2 shares of American Bell, on later 2 for 1 exchange basis.

²⁸ See exhibit 230, tables 7 and 12, pp. 25 and 34, respectively, and exhibit 2096-A, appendix 2, sheet 5.

²⁹ Especially is this true if the combined voting power of the scattered small holders is made available to the incumbent management through the mechanism of proxy voting, as is subsequently described.

chances of a successful challenge to this working control, held by the incumbent management, by any independent or opposed financial group are minimized by the very size of the corporation itself. The total outstanding stock of the American Co. on December 31, 1907, was 1,315,514 shares with a par value of \$131,551,400, not including the \$150,000,000 of bonds convertible into stock in 1909, purchased, contracted for or under option by the banking syndicate. As of December 31, 1935, the total of outstanding voting stock was 18,662,275 shares of \$1,866,227,500 par value.³⁰ Obviously, it would be extremely difficult for any rival financial interests, through outright purchase of a majority or even a sizable minority of this voting stock to obtain direct or working control of the company. The Mackay group made such attempts, in 1906 and 1907. In 1906, Mackay requested that a Mr. George M. Cumming be "substituted for Mr. Vail," who he claimed represented the Mackay interests on the American Co.'s board. This statement Vail denied³¹ and the Mackay request was refused. Later, on February 1, 1907, Mackay again demanded representation, suggesting the election of himself, Pliny Fisk, and Dumont Clarke. Coolidge wrote Fish (February 10, 1907), "The Mackay Companies have nerve. Their interests are opposed to ours and of course at this time cannot secure representation." Later, (March 22, 1907) Fish wrote Mackay, "It is the opinion of those whom I am obliged to consult that it is not wise to elect upon our board too large a representation of another and, to some extent, a competing corporation. * * * We very much regret that Mr. Dumont Clarke was not inclined to accept our invitation to allow us to elect him as one of our directors." Although the Mackay purchases reached a maximum of well over 70,000 shares, representing at one time an investment at market value of something over \$10,000,000,³² their attempts did not succeed even to the extent of naming a single director to the company, and management control continued in the hands of those who constituted the executive committee and the board of directors, all of whom collectively held less stock than the Mackays. With the failure of the company's largest single stockholder to gain any voice in the management of the company, it is apparent that the chances of a successful challenge to the working control of the incumbent management by any dissident stockholder or small group of stockholders, regardless of the size of their individual holdings, are practically negligible.

Further dispersion of the American Co.'s stock was also effected through the activities of the Bell Telephone Securities Co. This company was organized by the American Co. in 1921, principally for the express purpose of redistributing its stock more widely geographically and into the hands of a larger number of smaller holders. During the activity of this subsidiary, from 1921 to 1933, the number of stockholders increased 266 percent, from 185,856 to 680,454.³³

³⁰ See exhibit 1360-B, schedule 27.

³¹ Letter from Vail to Fish, April 14, 1906, reading in part as follows: "I do not understand that Mr. Mackay has any interests in the policy of the company—not common to all shareholders. If he has then certainly I do not represent them." (See exhibit 2096-F., p. 111.)

³² Subsequent to the Mackay's request for representation, made during the early part of 1907, the Mackay holdings increased to more than 82,000 shares, following the company's issuance of a new block of stock later that year.

³³ During the process of purchasing American Co. stock for resale, this subsidiary voted the shares in its possession. For several of the years of its active existence it was the second ranking stockholder voting at annual meetings. The personnel and officers of this securities subsidiary were employees of the American Co. and under the control of its management. See exhibit 250, pp. 1-10.

Proxy voting by stockholders.—With a widely dispersed body of stockholders having a very small average investment in the business, stockholders' voting by proxy undoubtedly has been a major influence in assuring continuity of the existing management. So long as dividends are satisfactory, and having but an infinitesimal voice in the determination, by voting, of the membership of the board of directors, the stockholder has little or no incentive to inquire into the management personnel or the established policies and practices of the company. The average stockholder's interest, even if sufficient to cause him to sign and return the proxy, has not been of sufficient magnitude to cause any widespread questioning of the method of selection of the person or proxy to whom he is asked to delegate his right, as a stockholder, to control his corporation's policy and conduct.

(1) *Operation of proxy voting.*³⁴—When stockholders are advised, by letter, of the date of the next annual meeting of the stockholders, at which time the directors for the subsequent year will be elected by the stockholders who are present at that meeting either in person or by "proxy," a proxy slip is enclosed, which the stockholder is requested to sign and return if he cannot attend the meeting in person. Available proxy forms indicate that, prior to 1905, these forms were printed with a blank space left for the stockholder to indicate the name of the proxy to whom he wished to delegate the right to vote his stock. In 1905, at the time stockholders were asked to attend a special meeting to vote upon the question of authorization of the issue of convertible bonds the practice was deviated from, apparently for the first time, in that the names of the proxies were printed in and no provision was made for the stockholder to insert a proxy of his own choice. The proxy forms for subsequent years likewise have the names of selected proxies printed in the form, but since 1910 the practice has been to leave blank space after these printed names so that other names may be written in if the stockholder so elects. A description is given, later, of the method by which the names of these proxies are selected before being printed in the proxy forms distributed to stockholders in this manner.

As these signed proxy forms are returned to the company they are checked against the stock records and tabulated in batches. This process continues until the morning of the stockholders' meeting when the inspectors of election, who usually are employees of the company, report to the meeting the number of votes represented by proxy. The proxy committee then votes on a previously prepared ballot on which are printed the names of the directors who are to be voted on, to serve for the ensuing year. The method by which these names are selected, for prior printing on the ballot for directors, is explained subsequently. A study of the 13 stockholders' meetings held during the period 1924 to 1935 indicates the amount of power concentrated, legally, in the hands of this proxy voting committee. With total stockholders varying in number from approximately 300,000 in 1924 to 700,000 in 1933, the total number of stockholders present and voting, either personally or through independently selected proxies, ranged from 45 to an even 100. In contrast, the number of stockholders who were "present" through representation on the previously selected proxy committee ranged from 184,576 to 396,172. Thus, as to the number of stockholders attending, the proxy committee repre-

³⁴ See exhibit 2096-A, pp. 30-32 and 110-115.

sented an average of more than 4,500 times as many stockholders as attended personally or by independently selected proxies. The number of shares represented by the proxy committee is equally disproportionate as compared with other voting stockholders. The total number of shares voted by those stockholders who attended personally or by independently selected proxies ranged from 1,687 to 6,987, except for 1 year, 1934, when 44,075 shares were so represented. In contrast, the proxy committee held voting power of a block of stock ranging from a low of 4,764,339 shares in 1924 to a high of 13,080,817 shares in 1931.

Over this entire period, the average voting power of the proxy committee was more than 1,300 times the combined voting power of all other stockholders voting, though in 1 year this advantage fell as low as 239. It may be noted that, if all the nonattending stockholders plus those attending personally or by independently selected proxies had voted against the proxy committee, its vote still would have been controlling, for it voted from 55.30 percent to 72.66 percent of all the outstanding stock of the company.³⁵

(2) *Selection of the proxy-committee members.*—During the entire period above covered, the proxy committee consisted of five members who were also members of the executive committee (with two exceptions, one in 1924 when one member, Milne, was a former company treasurer, and another instance in 1929 when one member, Houston, was a director but was not made a member of the executive committee until 1933). The method of selection of the members of the proxy committee has been described by the American Co., in answer to that question, as follows:³⁶

In 1934, and in each year prior thereto within the recollection of the present officers of the company, selection of the proxy committee for annual or special meetings of the company has been discussed informally at regular meetings of the executive committee. It has been the custom to select such proxy committee from the membership of the executive committee. Members of the proxy committee have been requested to serve as such in each successive year, vacancies occurring by resignation or death being filled by the selection of other members of the executive committee. The usual practice has been for the president of the company at a regular meeting of the executive committee, to request members present who had served in the previous year to act as members of the proxy committee for the next ensuing annual meeting and, in the event of a vacancy occurring in such membership, to request another member of the executive committee to serve.

Subsequent to 1934, when the relevant rules of the Securities & Exchange Commission became effective, the board of directors has formally adopted a resolution directing the secretary to mail this proxy to the stockholders with the names thus specified officially by the board of directors, rather than being reported informally to the directors by the president.

(3) *Selection of directors' names for the printed ballot.*—With responsibility for selection of this controlling proxy committee thus definitely traced to the incumbent president and board of directors, the next logical inquiry is the identity of those who select the directors on whom the proxy committee votes.³⁷ In answer to this query the American

³⁵ See exhibit 2006-A, schedule 6.

³⁶ From a memorandum received by the investigation staff from the American Co. on Nov. 27, 1935, in answer to the question, "Who selects the proxy committee?"

³⁷ It should be recalled that these names are printed on the ballot handed the voting stockholders. There is no provision for checking off alternate names of selections, but the ballot contained a single list or "slate," on which the stockholder may vote affirmatively.

Co., after first stating that the directors are elected by the stockholders, gives the following information on the manner of selecting the directors whose names are printed, prior to the date of the annual meeting, on the ballot to be used by the proxy committee. This part of the company's reply states:

In advance of the annual meeting of stockholders, none of the members of the board of directors in office having expressed unwillingness to continue to serve, a ballot is prepared in printer's proof form by the secretary, listing the members of the board of directors then in office, which is submitted to the president of the company for approval. When approved, the ballot is printed for distribution to the stockholders present in person at the annual meeting who desire to vote the same. A ballot in this form is signed by the members of the proxy committee present at the annual meeting, and also separate ballots are signed by individual members of the proxy committee when such individuals are designated by stockholders as proxy holders, the names of other members of the committee having been stricken out by the stockholder.

There has been no evidence of any contest for election of directors since 1907, when Clarence Mackay attempted to gain representation on the directorate for his more than 70,000 shares. This mechanism has been largely under the personal supervision and control of the company's president.

*Selection of directors.*³⁸—The previous section has indicated the manner in which a wide dispersion of stock ownership among a large number of small stockholders, in connection with control of the proxy voting committee by the existing management, serves to continue the incumbent board of directors in control of the company's management policies indefinitely. During the continuance of satisfactory dividends, use of the proxy mechanism is more perfunctory than essential, for practically no effort is made by the stockholders to appear and vote at the annual meetings.

Under these conditions the power to select directors apparently has been exercised directly by the president, as is shown by reference to the correspondence of President Vail, who was installed in 1907 at the time when the management of the company was changed under the influence of the investment banking group which had underwritten the company's issue of convertible bonds. In reviewing this correspondence briefly it is significant to bear in mind that, legally, the directors have the power to appoint the president, rather than the reverse.

Until 1902 New England interests were almost exclusively represented on the board, reflecting the origin of the company and its early financial backers. With the advent of banking control of the executive committee in 1907, the board of directors underwent a gradual change. Within a year after Vail's election to the presidency, as previously has been shown, he suggested the election of Mr. Winsor, of Kidder, Peabody & Co.; Mr. Higginson, of Lee, Higginson & Co.; Mr. Harris, of N. W. Harris & Co.; and Mr. Morgan or Mr. Steele, of J. P. Morgan & Co. All of these men were bankers closely associated with the bankers' group which had underwritten and distributed the \$150,000,000 issue of convertible bonds, and which had been identified with the election of Vail to replace President Fish.

Vail continued to discuss with his executive committee desirable additions to the directorate. In 1909 Vail wrote Crane, one of the executive committee members, saying, in part:³⁹

³⁸ See exhibit 2090-A, pp. 67-71, and 115-125.

³⁹ Letter from Vail to Crane dated January 20, 1909 (president's private letter book No. 6).

I was talking last night with Mr. Howe in regard to the coming election and the filling of the vacancy in the directory. I think if we could get a good Chicago man, a good Philadelphia man, and some good New York men outside of the present group, that it would be a good plan. Mr. Herbert Terrell seems to me to be as good a man as we could get from New York, and I think he would be willing to serve. If we could get Mitchell of Chicago, it would be a good thing, * * * In Philadelphia, I am not so well posted, and do not know the groups of people sufficiently to suggest. Have you any idea or suggestions to make in respect to that?

Mr. Winsor, of Kidder, Peabody & Co., one of the convertible-bond syndicate members, expressed a mild objection to the selection of Terrell, and he was not invited to become a director; Rudolph Ellis, of Philadelphia, was elected that spring, and later in the same year J. J. Mitchell, of Chicago, and H. P. Davison, of New York, were elected. Mitchell was president of the Illinois Trust & Savings Bank of Chicago, a director in Waterbury's Manhattan Trust Co., and a director in Baker's First National Bank of New York. Ellis was president of the Fidelity Trust Co. of Philadelphia and a director in Waterbury's Manhattan Trust Co. Davison was a partner in the Morgan firm. Shortly before the election of Davison, President Vail gave some indication of the primary source of some of his suggestions on directors in a letter written to Baker, in which he said in part:⁴⁰

Referring to your conversation with Senator Crane, I wish to say that it would relieve us of some embarrassment and produce unanimous action on the part of our board if I should recommend the election of one of the members of Mr. Morgan's firm at the December meeting, and the remaining one at the annual meeting in March.

There are two vacancies on the board, and no increase can be made except by the shareholders.

A long time ago with the consent of our board I asked Mr. J. J. Mitchell of Chicago to join our directorate, and he some time since signified his willingness to serve, and our board thinks that he should be elected to fill the other vacancy.

I would appreciate it if you would consult with Mr. Morgan and advise me if this course meets with his approval, and if it does, I will see that it is carried out.

In the following year, 1910, the number of directors was increased from 18 to 25. Of the 7 then named, 5 were minor employees of the company, elected as "dummy" directors until other permanent selections should be made. The other 2 were H. L. Higginson and Robert Winsor, both from banking firms which had participated in the convertible-bond syndicate. Vail then wrote Davison, a Morgan partner, reporting on this action, and stated, in part:⁴¹

* * * In regard to the directorship, I acted as you suggested. I did not propose Mr. Morgan's name, but instead put in dummy Director to await his pleasure, all of which I trust will be satisfactory. Whenever, in the opinion of Mr. Morgan, Jr., it will be wise for him to take the position of Director, we should be very glad to appoint him.

Apparently, Mr. Morgan, Jr., did not think it wise to take the directorship awaiting him, for he never was a director of the company.

Following this period Vail introduced a practice of geographical distribution of directorships which his successors, Thayer and Gifford, have followed. There has been a continuing tendency to give directorships to men with important financial connections. The essential fact concerning the directors is that they are not selected or even nominated by the stockholders but are selected by the president in consultation with the executive committee and the incumbent direc-

⁴⁰ Letter from Vail to George F. Baker dated November 19, 1909 (volume entitled "T. N. Vail, Personal Letters, May 27, 1907, to Jan. 21, 1911").

⁴¹ Ibid., letter from Vail to H. P. Davison, care of J. P. Morgan & Co., dated April 19, 1910.

tors, whereupon, through the votes controlled by the proxy committee, itself constituted by members of the executive committee, the existing directorate, with any additions or changes thus decided upon in advance, is reelected by a formal but completely perfunctory vote.

Selection of presidents.—Theodore N. Vail, the president who replaced Fish in 1907 when the management of the company came under the influence of the Baker-Morgan group of bankers, was succeeded in 1919 by H. B. Thayer, who in turn was succeeded in 1925 by Walter S. Gifford, the present incumbent. The connection of Vail with the reorganization effected in 1907 has been set forth previously. Continuity of the management organization established in 1907 is reflected in the manner of selection and election of the two successors to that office. Following the close of the World War, when Vail was elevated to the newly created office of chairman of the board, the next in line to him was Senior Vice President U. N. Bethel, who had held that position from November 19, 1912, to May 21, 1918, and who also was president of the New York Telephone Co. Bethel had been in charge of the American Co.'s operations during the brief period of Federal control in 1918 and 1919, when he served as chairman of the operating board of the United States Telegraph & Telephone Administration.⁴³ In June 1919, about the time Congress approved the act repealing wartime regulations and returning legal control of the telephone system to the company, Bethel was given an enforced leave of absence with full pay and was retired on pension at the end of that period. The tenor of the company's correspondence indicates that Bethel was abruptly and completely divorced from his connections with the company, though no evidence of the reasons therefor have been obtained. Thereupon followed the election to the presidency of H. B. Thayer, who was a year older than Bethel and had served as president of the Western Electric Co. and as a vice president of the American Co. About the same time, Gifford was made comptroller, while Vail still served as chairman of the board. The company's correspondence indicates that Vail chose Thayer as his successor in 1919 and that Thayer, after Vail's death in 1920, chose Gifford as his successor in 1925. The following excerpts from a letter written by President Thayer to Howe, of the executive committee, afford an insight into Thayer's and Vail's ideas on their own successors.⁴⁴

* * * The business has history and policies and character and morale which would be jeopardized if you ever again had to go outside of the organization for a president. We have, I believe, a very efficient and effective organization with all the elements of self-continuation. Since the election of Mr. Jewett on Tuesday, I can say that in our headquarters' organization there is either a younger or older man technically qualified and experienced, who could carry on, at least temporarily, the work of any department if that department's chief were removed.

That is true as to the position of chief responsibility assuming that either Mr. Gifford or I could carry the load without the other. However, it seems

⁴³ During the World War, for the period from July 1918 to July 1919, control of the American Co., along with all other telephone and telegraph systems, was legally under the control of the President of the United States. Actual operation of the plant continued under control of its former personnel and management, though the semblance of official control by the Government was preserved through the appointment of an operating board over all telephone and telegraph properties. Bethel was appointed to the chairmanship of this board from his former position of executive vice president of the American Co. During the same period Bethel was made vice president in charge of operations of the American Co. by its board of directors. During this brief period of nominal Government control, the properties of the Bell System continued to be operated under the direct control of its president, Vail, and its vice president, Bethel. For a more detailed description of this brief period of legal control by the Government, see exhibit 2066-B.

⁴⁴ Letter from Thayer to Howe, dated December 19, 1924. For copy, see exhibit 2066-A, appendix 17, sheets 2-4.

reasonable to me that, before I lose the ability to carry the load, to avoid a situation where our dependence would be solely upon him, Mr. Gifford should be put in a position to be thinking about and finally establishing in position, someone to take over the responsibility in the event of anything happening to him.

Then there is the question of finances and public relations. Because Mr. Vail had arranged for the election of a president when he was supposed to be well and vigorous, there was hardly a ripple of anxiety about the administration of the business when he died. It seems to me that we should try to avoid anything like a change in administration. It should be a continuous administration and the transfer of authority and responsibility should be made at the right time and in the right way as well as to the right man. I have always believed that for the benefit of this business, the change should be gradual—that the president should become chairman of the board at the summit of his powers and then as he becomes less necessary to the business should gradually fade from the picture while his successor is as gradually filling it.

Finally, there is the personal side of the subject and that is the side which prompted me particularly to ask special study of it by a committee. There is no more important question can come before the directors than the administration, and it seems to me that it demands impersonal consideration. I am personally interested and being personally interested, it seems proper that I should avoid making an official recommendation, but should put the directors in the way of coming to an independent conclusion. Mr. Gifford and I will be glad to be questioned. I have asked Mr. Houston to answer any questions without reserve.

The following letter to Howe, dated December 29, 1924, also indicates that Thayer took it almost for granted that Gifford was to be the selection of the board: ⁴⁴

* * * If Mr. Gifford is to take a larger part of the responsibility, it seems to me that his views as to how things should be set up should be given a good deal of weight and I am sure that he would be embarrassed in discussing such a subject in my presence and that is why I suggested and why I think it is really important that you should have some discussion of the matter with him.

A month later in January 1925, Gifford was elected president of the American Co.

Management's Interest in Control.⁴⁵

The interest of the management in the dispersion of stock ownership, and its care in determining the precise conditions under which voting control of the company could be exercised by various classes of stockholders, is indicated in its studies on this subject, prepared by the company's treasury department. The effect of the increasing dispersion of stockholdings, referred to above as an important factor in protecting the existing management from change through concerted action on the part of the stockholders, is indicated in the following statement from the treasurer's report on stockholder participation in the 1934 stockholders' meeting: ⁴⁶

It would have taken the 31,000 largest stockholders acting in concert to have voted a majority of the outstanding stock and at least 4,500 to have controlled a majority of the shares actually voted at the meeting.

As a further commentary on the practical impossibility of any group of stockholders offering any substantial threat to the perpetual continuation of the existing management, the further conclusions in this report are illuminating: ⁴⁷

* * * As an indication of the relatively small potential control which lies in the hands of any individual stockholder or any small group of holders, the

⁴⁴ Letter from Thayer to Howe, dated December 29, 1924.

⁴⁵ See exhibit 2096-A, pp. 125-126.

⁴⁶ Memorandum dated May 3, 1934, entitled, "Participation of American Telephone & Telegraph Stockholders in 1934 Annual Meeting," prepared by the American Co.'s treasury department. The report is reproduced as appendix 19 of exhibit 2096-A.

⁴⁷ *Idem*.

largest stockholder held only 0.68 percent of the outstanding stock, while the 20 largest holders held but 4 percent and all of the holders of 1,000 or more shares together less than 18 percent. Even with an uncontested meeting, the 20 largest holders held only 14 percent of a majority of the stock actually voted, while the entire group of holders of 1,000 or more shares held only about 61 percent of a majority.

Based on the average holdings of the remaining stockholders, the 20 largest holders would have required the proxies of about 173,000 holders in order to have controlled the 1934 meeting, while, on a corresponding basis, the 1,062 holders of 1,000 or more shares would have required the proxies of some 91,000 additional holders. However, had the 1934 meeting involved a contest for proxies and had every share been voted, the 20 largest holders would have required support from about 325,000 stockholders to have controlled the meeting, while the group of holders of 1,000 shares or more, had they acted in unison, would have required the votes of 268,000 additional holders.

In addition to these studies by the management upon the degree of control and dispersion of stock ownership, the company keeps a daily check upon what it terms "significant transfers" of its own stock. These daily reports are made to the assistant treasurer of the company, indicating all transfers of company stock involving 500 shares or more, showing the names of those selling and the names of those purchasing the stock. When a new name appears among the large stockholders the management takes steps to obtain information on the business connections and to obtain personal and biographical data concerning the new stockholder.

Summary.

Early control of the telephone patent passed in successive stages from the inventor, Bell, the early financier, Sanders, and the promoter, Hubbard, jointly, as the principal members of the original patent association; to Hubbard, as trustee; to an executive committee consisting of Hubbard, Sanders, and Bradley; to the later financiers, W. H. Forbes and his associates. Following firm establishment of the Bell's monopoly position, after Western Union's threat to its control over the field, funds were available readily from the general public, and ownership of a majority of the outstanding voting stock was no longer retained by the officers, directors, and their relatives.

When the Bell System's monopoly control over the industry again was challenged, after expiration of the basic Bell patents, by the rapid rise of independent companies, Bell's financial requirements again became the critical factor, and its alternatives apparently were either to accept a minor role in the telephone industry or to gain access to a stronger source of investment capital. At the same time, several strong and opposing sources of investment capital were seeking to gain control over the telephone field either through Bell or through organizing its independent competitors, and to establish a telephone-telegraph combination through merger of one or the other of these two telephone interests with one or the other of the two telegraph interests, Postal or Western Union. One of these strong sources of investment capital, the so-called Baker-Morgan group, sought to gain control over Bell and Postal in order to merge them. Following elimination of the early efforts of an opposing group in the direction of organizing Bell's numerous competitors and affiliating them with Western Union, the Baker-Morgan group abandoned Postal, following differences of opinion on methods, but subsequently did attain a position where it supplied most of the Bell System's capital requirements, other than that supplied through the sale of capital stock, with little

or no competition. With no other offer of equally large amounts of badly needed new capital, the Bell management apparently was forced either to accept an increasingly minor role in the telephone industry, or to comply with the terms of the Baker-Morgan offer of capital. The latter alternative was elected, and the then-existing management regime of Fish was replaced abruptly by that of Vail, in the following year, with full support of the Baker-Morgan group.

Subsequently, under the new management, the decline in Bell's relative position in the industry was arrested and gradually it acquired its present position of dominance in the telephone industry.

Detailed and direct management of the company's policies came to be exercised by a self-continuing management personnel represented by the president and the executive committee. Notwithstanding the legal control over management by the directors, the management, represented by the president and executive committee, has selected and recommended the election of directors, and these elections generally followed, aided by the mechanism of proxy voting by a proxy committee consisting chiefly of members of the executive committee. Wide dispersion of stock among a multitude of small holders, encouraged by the management through the activities of a subsidiary securities company, has in practice placed voting power of a majority or controlling block of stock in the hands of this proxy committee which the president appointed.

Thus, in its actual operation, control over company policies is concentrated largely in the hands of a management group consisting of the president and executive committee, which was installed through the influence of the Baker-Morgan group of investment bankers in 1907, and has been a cohesive and self-continuing management regime down to and including the present management, under President Gifford.

SECTION 2. AMERICAN CO.'S CONTROL OVER MANAGEMENT OF SUBSIDIARIES

The previous section has set forth the history and nature of control over the management of the American Co., which is the parent or holding company for the Bell System. This section will present the nature and degree of control exercised by this parent company management over the individual parts of the whole Bell System organization.

Functional Organization of the Bell System.⁴⁸

There are four principal functions of the Bell System organization in rendering telephone communications service, namely, management, research and development, manufacturing, and telephone operating. The management function is vested in the American Telephone & Telegraph Co.; research and development are the responsibility of the Bell Telephone Laboratories; manufacturing is carried on by the Western Electric Co.; and telephone operating is performed by the associated companies and by the long lines department of the American Co. ✓

American Telephone & Telegraph Co.—The American Co. is divided into the major functional units of the general department and the long lines department. The general department performs the activ- ✓

⁴⁸ This subject is discussed in exhibit 50, pp. 31-81; exhibit 1360-A, pp. 156-183; and exhibit 2096-G, pp. 1-7.

ities arising out of the holding-company status of American Co. and the duties imposed upon it under the terms of the license contract with the associated operating companies. The long lines department functions as a telephone operating company in the same manner as any one of the associated companies except that its activities are confined substantially to interstate long-distance telephone service, interconnecting the facilities of telephone companies offering local telephone service within their respective operating areas. The relations between the long lines department and the associated companies are discussed in the chapter on toll activities.⁴⁹ The long lines department is a part of the American Co. and is in charge of one of the vice presidents. The scope and completeness of the company's control over its long-lines functional division, therefore, is self-evident and requires no further discussion in this connection.

Chart 7, page 108, is an organization chart of American Telephone & Telegraph Co. as prepared by the company. This chart shows the long lines department without indicating any of its subdivisions. In addition, it shows separately the assistant to the president, the secretary's office, and the following six subdepartments of the general department: Development and research, operation (and engineering), accounts and finance, legal, relations with public bodies, and information.

The American Co. establishes liaison with the associated companies and its other subsidiaries through the subdepartments of its general department. Contact with the Bell Telephone Laboratories is attained through the department of development and research, the vice president in charge of the department of development and research of the American Co. being also president of the Bell Telephone Laboratories, Inc. Contact with the associated operating companies is maintained through various departments of the American Co., which serve as a staff organization covering the various activities of the associated companies. These staff functions include the following: Information, relations with public bodies, legal, accounts and finance, and operation and engineering. The functions carried on in the first four of the American Co. departments are evident from their title. The operation and engineering function encompasses the larger part of the continuous associated company activities, of which the more important are controlled by the following subdepartments of the operation and engineering department: Personnel; engineering, including plant operation; traffic engineering; general operating results; plant engineering; and commercial engineering.

The functions carried on in each of the several subdivisions concerned directly with the detail of associated company operations may be described briefly as follows: The president and executive vice presidents of the American Co. handle all matters of general policy concerning the Bell System through correspondence and conferences with the presidents of the associated Bell operating companies. All matters relating to engineering, construction, and development of the telephone plant are covered by letters directly from the plant engineer of the American Co. to the chief engineers of the associated companies. Most of the original letters are in circular form, and further questions concerning application to specific locations and cases are handled by

⁴⁹ See chapter 12, *infra*.

direct correspondence between the associated company chief engineers and the American Co.'s plant engineer. These letters, and similar ones on other subjects written by other American Co. employees, usually transmitted as "suggestions" and "recommendations," provide an implied supervisory authority in the staff of the general department. It is only natural that suggestions which the owners of a business direct their staff employees to make to the employees of the businesses owned should be accepted by the latter as "orders" rather than "suggestions" and "recommendations." Determination of the quantities of equipment to be installed in any given location to meet the service requirements is the responsibility of the traffic departments of the American Co. and of the associated companies. The American Co. exercises an influence which is equivalent to control over the volume of central office equipment installations throughout the Bell System by circular letters, correspondence, and conferences between its traffic engineer and the general traffic engineers or superintendents of the associated companies. A direct line of contact exists between the plant-operation engineer of the American Co.'s department of operation and engineering and the general plant managers or superintendents of the associated companies. Detailed instructions are issued by the plant-operation engineer covering maintenance practices, and periodic reports of maintenance results are required from the field. In addition to the advice and suggestions offered by the American Co.'s traffic engineer as to that part of the work of the associated companies' traffic departments which concerns the determination of quantities and types of central office equipment to be installed in the plant, the department of operation and engineering also maintains a close supervisory contact with the administration of the switchboard operating forces of the associated companies. Circular letters on traffic operating loads and on adjustment and control of the number of telephone operators to be supplied in each central office are issued by the American Co.'s traffic engineer and sent directly to the traffic managers and superintendents of the associated companies. Control of population and rate schedule forecasting throughout the Bell system has rested largely with the commercial engineer and the chief statistician of the American Co., and has been made effective by circulars of instruction issued to the commercial superintendents of the associated companies and by direct supervision and review of development studies for specific cities and areas made by the commercial departments of the associated companies. In addition to supervision and the preparation of population studies and estimates of the future requirements for telephone service, the work of the commercial engineer of the American Co.'s department of operation and engineering is concerned also with instructions to the associated companies' commercial superintendents concerning the sale of service to the subscribers, billing and collection of subscribers' accounts, and the routine financial work and records connected with the financial operation of the business.⁶⁰

Associated operating companies.—The functional organization of associated operating companies may be illustrated by that of the New York Telephone Co., which is generally typical. The general departments are as follows: Finance, legal, personnel, public relations, accounting, and operating. The operating department has subdivi-

⁶⁰ See exhibit 2006-G, pp. 19-26, and 75-111.

sions for each of the geographical areas into which the associated company's territory is divided, in addition to a staff organization, which includes a depreciation and valuation unit. These subdivisions for each one of the geographical areas consist of the following: Commercial department, engineering department, plant department, and traffic department, with the addition of a public relations and personnel department in the geographical areas most remote from the central office; that is, up-State New York and Long Island.⁶¹

Western Electric Co., Inc.—The Western Electric Co. has the following administrative departments: Treasury, legal, comptroller, public relations, personnel, sales and installation, traffic and purchase, and manufacturing. Treasury, legal, and comptroller departments report directly to the president, while the remaining departments are classified as the operating branch. Of these, personnel, public relations, sales and installation, and purchases are staff functions reporting to the vice president in charge of operations. The manufacturing department reports to a vice president under the senior vice president in charge of operations. (See chart 8, p. 109.)⁶²

The manufacturing department is divided into a staff and line organization, the former consisting of the engineer of plant, the engineer of manufacture, and comptroller of manufacture, and the latter consisting of the five manufacturing plants, namely, the Hawthorne, Kearny, Point Breeze, Queensboro, and Nassau Smelting Works. Each works is in charge of a works manager, who reports to the vice president in charge of the manufacturing department. The works managers are responsible for all operating activities at their respective locations, including the ordering and obtaining of the necessary raw materials and the scheduling and production of finished apparatus in accordance with delivery dates established by the sales department. They operate the tool and machine-building departments, the power plants, and general service facilities. They are responsible for the hiring and training of all works employees and for maintaining within the works harmonious employee relations. They originate changes in the rates of pay and piece-work rates.

The engineer of manufacture is responsible for all engineering activities connected with the manufacture of products; the development of new and changed product designs; cost-reduction studies; improvement in manufacturing processes and equipment; maintenance of product quality standards; the setting of wage incentives; and full supervision of manufacturing activities of new products during initial production.

The comptroller of manufacture is responsible for coordinating the production programs in accordance with requirements furnished periodically by the sales department; the issuance of instructions covering routines required to carry out the policies of management; the development of manufacturing department personnel policies and practices; and the supervision of preparation of expense budgets of the manufacturing department.

The engineer of plant is responsible for the design, construction, and supervision of maintenance of all company-owned buildings and service systems; negotiations for all leases for rented space; provision of satisfactory facilities for heat, light, fresh air, drinking water, and

⁶¹ See exhibit 50, p. 52; exhibit 1360-A, chart 47, p. 167; and exhibit 2096-C, pp. 60-61.

⁶² See exhibit 50, p. 68; and exhibit 1952, pp. 29-36.

sanitation; and for employee safety in compliance with insurance regulations.

Bell Telephone Laboratories, Inc.—The general organization of the Bell Telephone Laboratories consists of the following departments: Apparatus development, research, systems development, patent, general staff, protection development, transmission development, bureau of publication, and personnel. The research department carries on investigations of such matters as carbon granules for telephone transmitters, the magnetic properties of iron and its alloys, the electrical characteristics of textiles for insulation purposes, laboratory study of speech and telephone quality. The apparatus development department carries on such work as the study of contact metals, loading-coil characteristics, the design of loading coils, and tests of dry cells. In the systems-development department, studies are made of the functions of assembled units incorporated in an operating telephone system, such as manual- and dial-switching systems, systems for power supply, etc.⁵³

Bell System Allegations Concerning Control.⁵⁴

Before setting forth additional facts developed in this investigation concerning the degree and scope of control exercised by the American Co. management over the personnel, policies, and practices of the subsidiary companies constituting the Bell System, some mention may be made of the Bell System's position upon the degree of control it exercises over its subsidiaries.

Both the American Co. and the associated companies have controverted and attempted to refute the fact that the American Co. interferes in the internal affairs or the local management of the associated companies, and deny that it seeks to dominate the activities of those companies. Bell System counsel has argued that:⁵⁵

No such interference or control has ever been exercised by the American Company nor contemplated by the officers of either company.

The distinction between the corporations is as clearly marked as to property, money, records, accounts, and other details of corporate affairs as if the American Company were not a stockholder at all.

The corporate management of the Illinois Company is entirely separate from that of the American Company, nor does the latter, in fact, direct the affairs of the former, either by contract or interlocking directorships, or otherwise.

The American Co., in its annual reports to stockholders,⁵⁶ has stressed the fact that the Bell System "operates practically as a single organization," and "as one organic whole." When statements from these annual reports have been introduced in evidence in cases before courts and State commissions on the subject of domination and control of the associated companies by the American Co., the Bell System companies have contested the competency of such statements as evidence

⁵³ See exhibit 50, pp. 64-67; exhibit 231, pp. 1-7; and exhibit 2096-G, pp. [47-48].

⁵⁴ For examples of Bell System statements on this subject see the following: *William A. Read et al. v. Central Union Telephone Co. et al.*, Superior Court of Cook County, Ill., General No. 290689, Chancery (1917) final decree entered by William E. Dever; *People ex rel. Potter, Attorney General v. Michigan Bell Telephone Co.*, brief on behalf of Michigan Bell Telephone Co., pp. 27-28 and 44-45, Superior Court of Michigan, 246 Mich. 198, 224 N. W. 438, decided March 29, 1929; *Chesapeake and Potomac Telephone Co. of Virginia v. Commonwealth of Virginia*, 136 S. E. 575, Supreme Court of Appeals of Virginia, decided January 20, 1927, brief on behalf of Chesapeake and Potomac Telephone Co., pp. 158 ff.

⁵⁵ See *Smith v. Illinois Bell Telephone Co.*, 282 U. S. 151, brief filed on behalf of the company, pp. 8, 20 and 28.

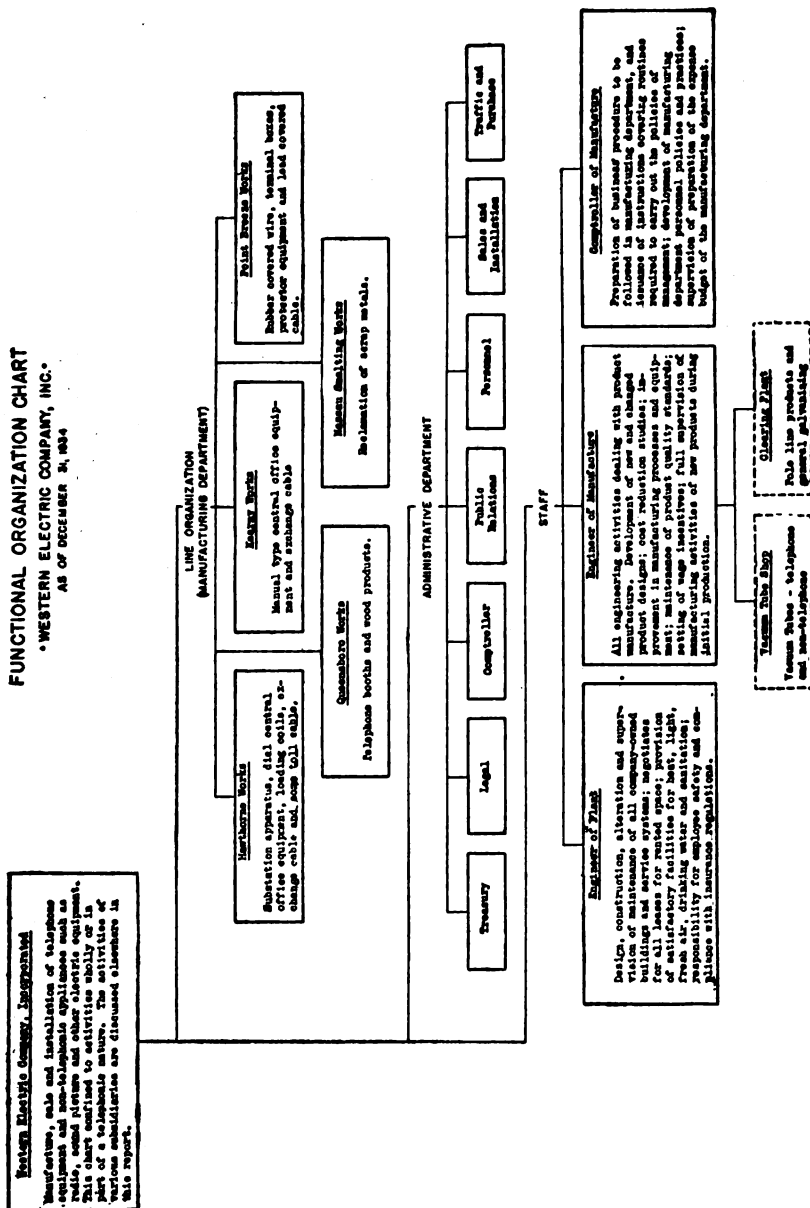
⁵⁶ See especially American Telephone & Telegraph Co. annual report for 1920, p. 7; annual report for 1923, p. 7; and annual report for 1935, p. 6.

CHART 8

FUNCTIONAL ORGANIZATION CHART

WESTERN ELECTRIC COMPANY, INC.

AS OF DECEMBER 31, 1934



and have asserted that such statements do not bind the associated companies.⁵⁷

In an address before the Bell System educational conference in New York on August 18, 1924, Walter S. Gifford, now president but at that time executive vice president of the American Co., stated: ⁵⁸

The Bell System is made up of a number of associated telephone companies. In effect, you might consider it as one institution and one company.

Briefly stated, the American Co.'s position before the public is that the Bell System is one unified organization, while its position before the courts is that the American Co. and associated companies are distinctly separate, with the associated companies managing their affairs independently and that the American Co. does not direct the affairs of the subsidiaries. This latter position of the American Co. is in direct contrast with the facts developed by the investigation, as set forth in the succeeding parts of this chapter.

Control Over Associated Companies.

Initial attention is given to the legal "right" of control by the parent company over its subsidiary operating units, the so-called associated companies. Subsequently, observations are made upon the manner and degree to which the American Co. has exercised that legal right, through direct selection of executive personnel of the associated companies, and through direct control over that personnel in its exercise of administrative functions within the associated companies.

Voting control.—Eighty percent of all telephones in the country are operated by the 23 associated companies,⁵⁹ in 21 of which the American Co. owns or controls a majority of the outstanding voting stock.⁶⁰ The outstanding voting stock of the Southern New England Telephone Co. is 33.34 percent owned, and the Cincinnati & Suburban Bell Telephone Co. is 29.72 percent owned by the American Co. Of the 21 in which the stock ownership or control is a majority, 10 are 100-percent owned and 6 are more than 99-percent owned. The ownership control in the 5 remaining companies ranges from 65 percent to 83 percent.

The power to vote these shares has been delegated to and has resided completely in the president of the American Co. since August 15, 1900, as the result of a resolution passed by the company's executive committee on that date. In 1925 similar powers were granted by the board of directors specifically to Vice President Houston and in 1927, following Houston's retirement from that office, to Vice President Cooper. The powers so granted remain in force giving to President Gifford and Vice President Cooper the voting power in the stockholdings of all subsidiaries, apparently without further action by the American Co.'s board of directors or its executive committee. This arrangement imposes upon the two officers named the duty of directly selecting the directors of 19 of the associated companies, which own and operate more than 70 percent of all the telephones in the United States.⁶¹

⁵⁷ See *People v. Michigan Bell Telephone Co.* (246 Mich. 198, 224 N. W. 438), brief filed on behalf of the company, p. 59; see also *Smith v. Illinois Bell Telephone Co.* (282 U. S. 151), brief filed on behalf of the Illinois Bell Telephone Co., p. 32.

⁵⁸ From addresses, papers, and interviews, 1913-28, of Walter S. Gifford, p. 111.

⁵⁹ See ch. 5 for more complete data on the degree to which the Bell System owns or controls all telephones. See also exhibit 50, table 3, p. 10.

⁶⁰ For a list of associated companies and the amount of their capital stock owned by the American Co., see table 4, pp. 24-25, *supra*.

⁶¹ See exhibit 2096-C, pp. 128-130.

The manner in which the American Co., as the principal stockholder, has exercised its prerogatives as a stockholder, in addition to the annual election of directors, is discussed in the following paragraphs.

*Personnel.*⁶²—Evidence in the American Co.'s files and correspondence indicates that the selection of the chief executive officer of the associated companies has been in the nature of a personal responsibility and privilege of the president of the American Co. An illustrative example is afforded by the tenor of President Gifford's statement in his letter to a vice president of the American Co., in which he stated, in part:⁶³

Yesterday I asked Carter if he would come on and take Hall's job and he is thinking it over. I expect him to accept. If he does, I have decided to make Eide president of the Ohio Bell and Carroll president of the Indiana company.

These decisions, or "suggestions," were carried out in every particular before the end of the month, though accompanied with the required legal formality. The board of directors of the Ohio Bell Telephone Co. elected Eide president of their company; the board of directors of the Indiana Bell Telephone Co. elected Carroll president of their company; the board of directors of the American Co. elected Carter a vice president of their company, at a salary of \$50,000 per year.

Extensive investigation of the company's files indicates that the selection of the presidents of the associated companies is, and has been, the rule and not the exception, not only under the direction of President Gifford, but also under the regime of previous presidents, over a period of the past three decades.

President Thayer, predecessor to President Gifford, stated frankly in one instance that promotion in the telephone business was a Bell System matter and not an individual company matter. In this instance President Thayer replaced President Brown of the Southern Bell Telephone & Telegraph Co. by promoting Ben S. Read to that position from the presidency of another but smaller associated company. This transfer was made in the face of a strong plea by President Brown that the Southern Co.'s next president be selected from among its own vice presidents. The long-continued existence of this control over the evolution of executive personnel of the subsidiary companies inevitably has resulted in a personnel which is highly sensitive to the desires and suggestions of the American Co. president.

The evidence further shows that the salaries to be received by these associated company presidents are fully and directly within the control of the American Co. The fact is established formally by vote of the associated company directors, but only if approved by the parent company, as is exemplified by a letter to President Thayer from H. T. Scott, chairman of the board of the Pacific Telephone & Telegraph Co., in which the latter, referring to action on the salary of that company's president, stated:⁶⁴

The meeting of the board of directors was held yesterday and Mr. McFarland's salary was unanimously made \$35,000 per year.

The only question asked was whether it would meet with your approval. That was assured.

⁶² See exhibit 2006-C, pp. 18-43.

⁶³ Letter from Gifford to Arthur W. Page, vice president of the American Co., dated April 9, 1930.

⁶⁴ Letter from Scott to Thayer, dated August 2, 1923.

Just prior to the time Gifford was elevated from executive vice president to president of the American Co., he wrote W. R. McGovern, president of the Wisconsin Telephone Co., stating: ⁶⁶

Replying to your note of December 12, we think the salary changes which you suggested and which I return herewith are consistent and proper. May I suggest that effective January 1, 1925, you arrange to increase your own salary from \$24,000 to \$26,000.

President Gifford wrote C. H. Rottger, president of the Indiana Bell Telephone Co., saying in part: ⁶⁶

There is a matter which I would bring up in person at an early meeting of your board but it does not seem likely that I shall be able to attend a meeting in the near future. I am therefore writing to ask if you will state my recommendation to the board that your salary be made at the rate of \$25,000 a year.

Rottger's salary was increased from \$23,000 to \$25,000 on the 1st of the month following the above recommendation. This direct control over executive officers' salaries is the rule, and not the exception.

Selection of directors of the majority-controlled associated companies is a legal prerogative of the American Co. and is exercised by those American Co. officers to whom its board of directors has delegated that authority. Messrs. Gifford and Cooper, the recipients of this delegated authority, exercise that prerogative in the most complete manner, as is illustrated by a representative example. President Pillsbury, of the Pacific Telephone & Telegraph Co., offered suggestions to President Gifford upon the selection of a successor to the office of chairman of the executive committee of the Pacific Co. and to fill a vacancy in their board of directors, both resulting from the death of McFarland, the previous incumbent. President Pillsbury proposed to President Gifford that Frank B. King be elected to the executive committee and that Atholl McBean be elected to the directorate. Gifford's veto of President Pillsbury's proposal is indicated by his memorandum of a telephone conversation he held with Pillsbury, recording his "suggestions" to Pillsbury, in part, as follows: ⁶⁷

That they abolish the position of chairman of the executive committee and, at the same time that the bylaws are changed in this particular, they change the bylaws with reference to the authority of the treasurer to designate other persons to sign checks.

That Mr. Griswold be appointed to fill the vacancy on the board.

The same day Gifford wrote Thayer stating that he had—

* * * just talked on the telephone with Mr. Pillsbury and he will abolish the office of chairman of the executive committee, and put Mr. Griswold in to fill the vacancy on the board.

Selection of personnel and recommendations as to salaries are not limited to the chief executives alone. The usual practice is for proposed promotions to be submitted to American Co. executives for approval and the American Co., if in agreement, replies with "full approval," "approved," or "I see no objections." In some instances influence of the American Co. takes the more positive form of specific suggestions by its president. An illustration of such suggestions is contained in a letter President Thayer of the American Co. wrote to President Thurber of the New York Telephone Co., saying, in part: ⁶⁸

⁶⁶ Letter from Gifford to McGovern, dated December 17, 1924.

⁶⁷ Letter from Gifford to Rottger, dated December 3, 1926.

⁶⁸ Memorandum by Gifford, dated July 28, 1925.

⁶⁹ Letter from Thayer to Thurber, dated July 30, 1923.

I have been giving a good deal of thought to the matter of your reorganization after Mr. Stewart leaves, and to my mind it shapes itself up about like this; that is, I offer this suggestion for you to be thinking about this week. I am going away today and will not be back at the office until a week from today, and that will give plenty of time for you to think it over and then we can discuss it.

The suggestion is, that your organization chart should be about like this:

J. A. Stewart, first vice president—on leave of absence.

J. S. McCulloh, vice president—and reporting to him: Mr. Woodbury; Mr. Sylvan; and the work that he is already doing on publicity and commercial policy; but letting the routine part of the commercial organization which, as I assume, is the part reporting to Mr. Welch, go to the general manager.

Another suggestion would be in the line of good organization, but whether now is the time to do it is a question, and that would be to let the accounting and financial work be combined under a vice president, who, I presume, would be Mr. Huntington, so that there would be reporting to you actively:

Mr. McCulloh, Mr. Huntington, the secretary and the general counsel, as well as the general manager; and that you make Mr. Cooper general manager instead of chief engineer.

What I have in mind is this: Two very important things to which a president should give his attention and support are the study and establishment of public relations and personnel relations. In the New York Co. something has been done on personnel relations and more on public relations. Before committing ourselves to your successor, I would like an opportunity to see what can be added along those lines, and particularly on personnel relations, by the man you have in mind.

J. S. McCulloh, who was then a vice president of the New York Co., became operating vice president 2 weeks after the date of President Thayer's letter—on August 16, 1923. Slightly over a year thereafter, on September 24, 1924, he was made president of New York Telephone Co. It would appear that Mr. McCulloh was given a trial period as operating vice president in order that President Thayer might determine his capabilities along the lines of public relations and personnel relations before committing himself to his appointment as president of the New York Telephone Co. Mr. McCulloh continued in his capacity as president of the New York Co. until 1933, and he is at the present time chairman of the executive committee of the New York Co.

The interest of American Co. executives in the personnel of its associated companies extends well down into the organization of subordinates. In the office of the American Co. president are the personnel records of all Bell System subordinate officials having salaries above \$7,500. In the comptroller's office is a further record of all Bell System employees receiving from \$3,600 to \$7,500 per year.

The American Co.'s counsel and influence over public and company personnel relations extends to definite suggestions on the literature for distribution to employees, as indicated by Gifford's letter to all associated company presidents, stating: ⁶⁰

■ In accordance with the discussion at the Yama conference we are having prepared brief and simple explanations of certain matters upon which we are attacked, such as the Western Electric Co. relationship, the 4½ percent contract, and the 9 percent dividend.

It was suggested that such articles be used for talks with employees and possibly should be distributed to all employees. We are sending herewith the manuscript of the first of these papers, and will be glad to get your comments. If it seems available to you as it stands, there is no reason why you should not make immediate use of it, through employee associations and such other means as you have available.

⁶⁰ Letter from Gifford to the presidents of the associated companies, dated June 25, 1924. See exhibit 2006-C, pp. 106-110.

Comments received from the companies caused no change in the literature as prepared by the American Co. In transmitting these papers to the subsidiaries, the American Co. warned against the danger that this unified effort to educate Bell System employees might be "interpreted as a Nation-wide campaign on the part of the Bell System to defend itself," and suggested that the literature be used merely as background and that the associated company "adopt its own plan in getting the ideas set forth in the articles understood by the employee."

*Finances.*⁷⁰—The associated companies are required to submit annually to the American Co. for its approval their "provisional estimates" which include construction budgets, and are required to secure the needed funds from the American Co. in the form of advances or obtain them from sources and in amounts approved by the American Co. The operation and engineering department of the American Co. advises the associated companies in detail on the preparation and constitution of these estimates.

These advances of funds by the American Co. in many instances are subsequently liquidated by stocks issued by the subsidiary company, or through sale of its bonds to the public. It is evident that the associated companies, when issuing securities, act directly under the instructions of the president of the American Co. Under these circumstances the American Co. may decide the time and manner of issuance of stock to liquidate advances of funds from the parent company so that the interests of the American Co. rather than of the operating company, may best be served. Illustrating the parent company's control over subsidiary company finance is Gifford's memorandum to E. S. Bloom, then vice president of the American Co., in which Gifford states:⁷¹

I have been considering your suggestion of July 20 for the future financing of the Indiana Bell Telephone Co. If the rate hearings should result, as you hope, in the approval of rates which would be sufficient to place the common stock on a 5-percent basis, on account of the present deficit of the Indiana Bell Co., it is apparent that dividends cannot be paid until 1924 at the earliest and possibly not until 1925. Any further investment therefore in the stock of the Indiana Bell or any conversion of their debt into stock will result in the American Co. foregoing any return on its investment in such stock for the next 2 years.

In view of this situation, would it not be better to continue, for the present, financing the Indiana Bell by advances from this company. In this way we will at least get the interest on such advances. We can then take up at some future date the question of increasing the capital stock as you suggest.

Advances of funds to the associated companies are authorized only provided the subsidiary company's annual financial program is approved by the American Co.'s executive committee. Legal formalities are observed meticulously in detailed instructions to the subsidiaries on the form of resolutions to be passed by their board of directors covering request for these approved amounts. The evidence is clear that the officials of the associated companies are responsible directly to the American Co. for the expenditures which they desire to make.

Control over the subsidiaries apparently extends to situations in which the American Co. officials sign correspondence and agreements in the name of the officials of the subsidiary companies, as illustrated by a letter to President Belt of the Northwestern Bell Telephone Co.

⁷⁰ See exhibit 2096-C, pp. 63-78.

⁷¹ Letter from Gifford to Bloom, dated Aug. 8, 1922.

concerning the sale of \$30,000,000 of its bonds to J. P. Morgan & Co., in which Mr. Gifford stated:⁷²

I enclose herewith letter from J. P. M. & Co. [J. P. Morgan & Co.] of January 8, together with a reply thereto which I signed in your name. These, of course, should be kept in your official files.

At your convenience will you please send me a letter addressed to J. P. M. & Co. identical with the carbon attached hereto, signed by yourself, which I will then substitute for the letter that they have on file in order that their records may show that you personally have confirmed the understanding. This is, of course not absolutely necessary as I was authorized by you to sign your name to the other letter.

In a later letter concerning the same transaction Mr. Gifford advised President Belt as follows:

I enclose herewith a printed copy of your descriptive letter addressed to J. P. Morgan & Co. dated January 7. I signed this in your name, and at your convenience I wish you would have it written on your letterhead and signed by you and sent on to me for transmittal to J. P. Morgan & Co. This is so that their files and records may be in shape.

As sole or principal stockholder of the subsidiary companies the American Co. naturally exercises supervision which amounts to control over the payment or passing of dividends, and the amount of dividend to be declared. The American Co. also maintains control and supervision over the purchase of independent or connecting companies, and over the purchase price to be paid by the associated companies.

*Administration.*⁷³—The previous section has shown that the president of the American Co. not only exercises its legal power to control associated companies through election of their directors but, in addition to the exercise of this power, the executive officers of the American Co. also exercise direct control over the selection, election, and remuneration of associated company presidents and other executive officers, and indicate the administrative organization under which the associated company shall operate. The American Co. executives' long-continued exercise of control over the promotion and salary increases of administrative officers in the subsidiary companies gradually has built up a Bell System personnel constituting a Nation-wide administrative staff which is highly responsive to all suggestions on policies or practices emanating from those officers who hold and directly exercise over them the prerogatives of promotion and remuneration. It has followed as a logical consequence that the influence of the American Co. executives upon actual details of administration within the associated companies, may be carried to any degree considered desirable by the holding company management.

An outstanding observation on the nature and scope of the American Co.'s influence over associated companies is that the details of policy and practice in each of the major fields of associated company activity are under constant study by those departments of the American Co. which are organized in each of the several functions or fields of Bell System activity, and exert their authority through direct contact with the respective functional departments within the associated company without the necessity of clearing their detailed suggestions through the executive officers of the subsidiary companies. The American Co. president, with his executive committee, selects the personnel and sets the salaries for those responsible for administration of the subsidiary companies, and also directly supervises their finances.

⁷² Letter from Gifford to Belt, dated Jan. 8, 1921.

⁷³ See exhibit 2006-C. pp. 59-63.

These same American Co. executives naturally exercise absolute control in the policies and objectives of the functional departments of their own organization, the holding company. These departments of the holding company, in turn, consult directly with the respective departments in each of the associated companies and offer suggestions on the more detailed policies in each individual field through correspondence, circulars, bulletins, field visits, communication by telephone and by individual or group conferences attended by representatives of the associated companies and the parent company. On account of the source of the "suggestions" they amount to orders controlling the detailed policies. The functional nature of these group conferences is indicated by the following list of titles of the more important subjects covered:

- Presidents' conferences.
- Operating vice presidents' and general managers' conferences.
- Public relations conferences.
- Rate conferences.
- Legal conferences.
- Management conferences.
- Chief engineers' and plant superintendents' conferences.
- Engineers' conferences.
- General commercial conferences.
- General plant engineers' conferences.
- Operating conferences.
- Personnel conferences.
- Plant engineering conferences.

The functional organization of the holding company is made effective in controlling associated company policy and practices, in their several functional areas, through this direct influence of the several American Co. functional departments upon the activities of the respective departments in the associated companies. This direct control by the parent company over subordinate departments of the associated companies, and the extent to which this control has been exercised, is indicated by an objection made by President Nims of the Southwestern Bell Telephone Co. at one of the annual conferences of associated companies' presidents, in which Nims, acting as spokesman for the associated companies, voiced the following mild objection concerning these conferences of American Co. personnel with subordinate employees of the associated companies:⁷⁴

Instructions received by subordinates to the presidents of associated companies are sometimes put into effect without consulting their superior officers. There are perhaps too many conferences and it would be better if more A. T. & T. men visited the field. (Suggestion was made by one associated company president that he took care of the matter by having the people see him immediately when they returned from conferences and outline results to him.)

The remedy suggested was stated to be:

It might be possible to send a statement of the main things accomplished at conferences to the presidents of associated companies.

The remedy did not suggest that associated company departments be more directly controlled by their own presidents, but merely that those presidents be informed of the things "accomplished" by their subordinates, in conference with representatives of the American Co.

Control over the associated companies' plant construction program does not end with control over the total budget to be expended in such plant, but reaches into details of the type of equipment installed as

⁷⁴ Discussion by Nims as recorded in a document entitled "Yama Farms Conference," June 4 to 9 (1921) from the files of President Gifford.

well as the methods of operating and maintaining the equipment after its installation. Control over the ultimate details of the associated companies' telephone plant construction, operation, and maintenance is established through direct training of the associated company personnel and the direction of that personnel by American Co. general departments through the media of memoranda, circulars, and letters transmitted from the latter's operation and engineering department directly to the associated company operating departments, where they reach the hands of individual members of the operating and maintenance personnel of the operating companies.

Uniformity in and influence over the training of this operating staff is advanced by courses of instruction and lectures delivered by American Co. instructors to associated company employees brought from all parts of the Bell System. These courses, covering from a few days to 3 or 4 months each, are carried on both at New York and in the field, and are divided into three main groups—"plant," "traffic," and "commercial" courses. These three activities concern, respectively, the type, construction, and maintenance of plant, the administration, operation, and personnel problems connected with use of the plant in delivering telephone service; and finally the sale of that service, including billing and collecting of accounts, as well as the study and forecast of probable increase or decrease in the volume of service sold, based upon studies of population and urban growth.

A brief summary of the number of these courses, and the equivalent days of instruction involved, indicates the scope of this direct training by American Co. personnel. The summary, covering the period 1929 to 1935, inclusive, is contained in the following tabulation:

Activity	Number of courses	Instruction time in days	Number of students	Students' time in days
Plant.....	36	418	829	7,104
Traffic.....	78	739	1,166	9,284
Commercial.....	206	1,188	2,300	13,838
Total.....	320	2,345	4,295	30,226

Source: Exhibit 2096-G, pp. 16-18.

This personnel instruction is reinforced by a considerable volume of written instructions in the form of circulars, memoranda, and letters which are kept up-to-date by reissues as changes in methods or practices become desirable. The volume of this instruction is indicated by the following summary of various types of these letters and circulars, over the period 1929 to 1935:

TABLE 28.—Numbers of American Telephone & Telegraph Co. engineering, plant, and traffic circulars (1929-35)

Type of instruction	Number of items	Number of pages, etc.			
		Letter pages	Bulletin pages	Photo-stats and prints	Total
Traffic letters.....	218	418	899	135	1,452
Traffic circulars.....	103	234	4,210	283	4,727
Plant engineering circulars.....	353	1,067	4,103	725	5,895
Plant engineering letters.....	1,543	3,378	4,517	1,807	9,702
Plant engineering memoranda.....	622	1,217	632	549	2,998
Plant operating circulars.....	48	114	384	94	592
Plant operating letters.....	365	637	1,843	142	2,622
Total.....	3,252	7,065	16,588	3,735	27,888

Source: Exhibit 2096-G, p. 44.

These instructions, couched in the form of "information" and "suggestions," result in a high degree of uniformity in plant and in operation methods and practices, under the control of the American Co., which prepares and issues them.

→ *Rate policy.*⁷⁵—The American Co. takes a hand in local rate matters to a greater degree than is generally apparent to local regulatory commissions, and to a greater extent than appears consistent with the local nature of the problem. In the determination of specific rate schedules, in the conduct of rate cases, and in the publicity campaigns attending rate cases, not only does the American Co. exercise a dominating influence, but in all important decisions or aspects of local rate cases between State commissions and associated companies the latter must obtain the approval of the American Co.'s legal staff. At one time Vice President Bloom, of the American Co. indicated particular reasons for this unifying control of the American Co. over local rates in a letter to all presidents of associated companies, in which he stated:⁷⁶

As you know, we are facing a possible investigation by the Interstate Commerce Commission as the result of the complaint filed by former Mayor Curley of Boston following the decision of the Massachusetts Commission in the Massachusetts Rate Case last summer. There is also the possibility of a congressional investigation due principally to the activities of a New York Congressman. For this reason, we think it important that proposed rate adjustments should be very carefully considered from the standpoint of possible unfavorable reactions in Washington; for example, a rate adjustment in some relatively small community might stir up the local Congressman to take an attitude unfavorable to us when he might otherwise remain neutral.

I would therefore suggest that you advise me at an early date as to each specific rate adjustment which you propose to initiate within the next 6 months, showing briefly the present and proposed rates for the main classes of service, i. e., business, residence, extension, private branch exchange switchboards, trunks and stations, and the dates you propose to take action; also a general statement as to the chances of putting through a rate adjustment without unfavorable reactions.

Upon receipt of your reply, we will consider the same in connection with replies from other associated companies and advise you further in the matter. In the meantime, it might be just as well to defer taking definite action in new cases.

Implications of considerable importance are contained in this communication. The clear impression is left that rate policies, in their broader aspects, are founded upon political rather than upon engineering cost and service considerations. The quite apparent intention to increase only those rates which can be changed, without causing political unrest, is further indicated by President Thayer's statement that as far as the American Co. was concerned, it did not concern itself with the form by which the American Co.'s earnings were obtained, but that⁷⁷—

* * * the whole point is that in some way the revenues should come in so as to make the earnings of not less than 10 percent on the American Telephone & Telegraph Co.'s stock. That way should be the way which is the least burden upon the public and the way which is the most satisfactory to the State commissions, but it is a matter that we cannot submit to the commissions to decide.

The degree of detailed supervision by the American Co. over associated company rate activities is indicated by the following example in which President Cooper, of the Ohio Bell Telephone Co., wrote Vice President Bloom, of the American Co., asking a series of numbered, specific questions on such details as:⁷⁸

⁷⁵ See exhibit 2096-C, pp. 90-106.

⁷⁶ Letter from Bloom to the presidents of all associated companies, dated January 12, 1926.

⁷⁷ Folder entitled "Conference of Executives, 81 (1919)" from Thayer's files. See exhibit 2096-G, p. 11.

⁷⁸ Abstracted from a letter in reply to these questions, written by Bloom to Cooper, dated June 21, 1926.

1. Shall the Ohio Co. proceed in an effort to obtain increased rates in the Canton area?
2. Shall the Ohio Co. proceed with filing of individual exchange rate schedules?
3. Shall the Ohio Co. proceed, in an anticipated Federal court action, on a company-wide basis, or on a more local basis involving 32 specified exchanges?

Vice President Bloom, of the American Co. gave President Cooper, of the Ohio Co. a set of full and definite answers to each of the detailed rate questions posed by the latter. That these are not sporadic and isolated examples is demonstrated by the continuance of similar correspondence, in subsequent years, showing American Co. control over rate policies of the associated companies. This control and advisory counsel applies also in the campaign of publicity preceding and during rate cases by Vice President Page and on the actual conduct of the rate cases, by General Counsel Bracelen, of the American Co.

*Annual stockholders' reports.*⁷⁹—Finally, the evidence indicates that it is the practice of the associated companies to submit to the American Co., for approval, drafts of their annual stockholders' report before they are issued for public perusal. Considering the legal formalities involved this is, in effect, a situation in which the stockholder suggests to the directors of his company the content of the report to himself on the manner in which his directors have discharged their responsibility as his sole agent in the conduct of his business. The apparent anomaly epitomizes the difference between the rights usually exercised by the stockholder to control the company through the annual election of directors and the degree of actual control exercised by the American Co. over the detailed administration of its subsidiaries.

Control Over Western Electric Co.

The American Co. owns over 99 percent of the voting stock of Western Electric Co., consequently making the latter subject to the influence of the American Co. in the same degree and through the same methods indicated in the previous section as exercised over the majority-owned associated companies. The functional organization of the manufacturing subsidiary differs from that of the telephone operating subsidiaries, for obvious reasons. Consequently, it is not controlled, department by department, by the corresponding functional units of the parent company. The degree of the American Co.'s control over its manufacturing subsidiary is illustrated by the fact that it functions almost solely as a physical production machine, with external control by the parent company over the exact specifications of its products, including the determination of the types and quantities it shall produce. The manufacturing company does not even decide, ultimately, the price at which its products shall be sold. In addition, as the manufacturing unit of a closely integrated telephone system, its sales are confined largely to the other Bell System subsidiaries whose purchases are subject to the American Co.'s controlling influence. The degree of influence of the American Co. over type, amount, and sales of Western Electric's manufactured products will be considered under each subject separately.

*Product specifications.*⁸⁰—The electrical, mechanical, and other technical specifications of new telephone equipment or apparatus are:

⁷⁹ See exhibit 2006-C, pp. 110-117.

⁸⁰ See exhibit 50, p. 58.

determined by the Bell Telephone Laboratories, another Bell System subsidiary, and Western's manufacturing specifications are required to conform to the laboratory specifications within definitely stated limits of accuracy. Continuous programs of inspection surveys are conducted under the direction of the Laboratories to assure that both the methods of manufacture and the products of manufacture are in accordance with the basic engineering specifications originally established by the Laboratories.

*Manufacturing authorizations.*⁸¹—The total amount of each type of product to be manufactured is determined by manufacturing authorizations, over which the American Co. exerts such control as it considers expedient. The number of separate items manufactured runs into thousands, many of which are unimportant in total value and quantity or have been produced and sold in relatively uniform quantities over many years. On these items the American Co. gives no detailed directions, for obvious reasons. However, in manufacturing authorizations covering expensive products, or those requiring expensive tooling preparations, the control rests directly and completely in the hands of the American Co. executives. An example of its exercise of this authority is afforded in the instance of the extremely significant order for the Western Electric Co. to equip itself with the necessary tools for the production of a specific quantity of panel dial machine-switching central office equipment. At a conference attended by Thayer, the president, and other representatives of the Western Electric Co., Thayer, who was then also a vice president of the American Co., issued the following:⁸²

Hawthorne shall proceed with the manufacture of tools for full mechanical equipment for the production of 35,000 lines of equipment per year, which tools are to be completed by January 1, 1919.

It is not deemed advisable to manufacture any additional tools for manual equipment to be used with automatic equipment until more is known of the demands for manual equipment, it being thought that there will be sufficient reduction in this demand to permit of caring for the manual equipment which is to accompany the full mechanical. Hawthorne is authorized to proceed with the manufacture of apparatus to the extent of 35,000 lines. The quantities and types of this apparatus, both manual and mechanical, are to be based on list dated September 3, 1918, compiled by the engineers, and known as list No. 5, which is already in the hands of the general merchandise department at Hawthorne and will be turned over to the shop immediately.

The tenor, as well as the content, of these specific and detailed instructions leaves no doubt as to the completeness of the American Co.'s direct control over Western's manufacturing activities. The program thus instituted under the direct authorization and control of the American Co. resulted in the expenditure, in 25 cities, of more than a third of a billion dollars for this equipment. The ultimate and direct responsibility for this manufacturing program rested with the American Co. officials and not with the Western Electric Co., which acted only as the organization for manufacture and assembly of the desired equipment under direct control of its parent company's executives.

*Market for Western Electric's products.*⁸³—Another aspect in which the Western Electric differs completely from the conception of an independent, autonomous manufacturing company is its complete lack of control over the market for its product. About 90 percent of

⁸¹ See exhibit 2096-G, pp. 26-31.

⁸² From American Co.'s department of development and research file No. 154, vol. XX, p. 379.

⁸³ See exhibit 2096-G, pp. 31-45.

its production is purchased by the associated companies, whose methods, equipment, and plant specifications are controlled by the American Co. Manufacturing companies which actually are autonomous and independent in their operations generally concentrate on their sales activities and market as a most important factor in their activities, for any failure to hold the market has fatal consequences. The strenuous competitive efforts of independent manufacturers, in the desire to hold their customers, is one of the vital forces resulting in progressive development of new products and in a high efficiency and economy in the manufacturing activity. This vital field of independent manufacturers' management policy simply does not exist in the Western Electric. Its market is controlled for it by the American Co. In demonstrating this position of Western Electric Co. as an advantage, President Bloom has stated:⁸⁴

The Western Electric Co. has certain important advantages over other telephone companies * * * there is no sales expense. The mere recommendation of the American Telephone & Telegraph Co., and the laboratories, and ourselves as a whole, after a device has been established, is all that is necessary. We do not have to go out and promote it.

In the face of this condition any independent action on the part of Western Electric, as a self-contained manufacturing company, is impossible. Considered in relation to the fact that the American Co. controls both the type and quantity of items it shall produce, it sharply differentiates the Western Electric Co. from the field of independent manufacturing companies and reveals it to be only the production department of the system of integrated corporations controlled by the American Co.

Control Over Bell Telephone Laboratories.

The purely nominal status of this subsidiary was indicated by President Gifford in a memorandum announcing its organization, stating:⁸⁵

It is planned to organize a new company to be known by some such name as the Bell Telephone Laboratories, Inc., for the purpose of carrying on the continuous program of research and development necessary to the progress of the Bell Telephone System. It will consolidate all the work of the present department of development and research of American Telephone & Telegraph Co. and the development and research activities now conducted by the Western Electric Co.

The board of directors will be made up of officers of the American Telephone & Telegraph Co. and the Western Electric Co.

Mr. J. J. Carty will be chairman of the board of directors in connection with his duties as vice president of the American Telephone & Telegraph Co.; Mr. F. B. Jewett, vice president in charge of the telephone department of the Western Electric Co., will be president of the new research company and its operating executive; E. B. Craft, chief engineer of the Western Electric Co., E. H. Colpitts, assistant vice president of the American Telephone & Telegraph Co., and E. P. Clifford, commercial manager of the Western Electric Co.'s engineering department, will be vice presidents of the new company.

While the details of the new organization have not been finally worked out, the new company will in general perform all the development and research functions hitherto performed by the component departments which are consolidated in it.

The management personnel of this subsidiary was planned to be, and did become, constituted of employees taken from the American Co. and its subsidiary, the Western Electric Co. The Laboratories'

⁸⁴ *Lindheimer v. Illinois Bell Telephone Co.*, 292 U. S. 151, Transcript of Record, vol. I, p. 412.

⁸⁵ Memorandum by Gifford, dated September 19, 1924, entitled "Organization Change Planned to be Effective on or before January 1, 1925." Also see exhibit 231, appendix I.

chief executive officer, John J. Carty, later succeeded by Frank B. Jewett, continued as vice president of the American Co., subject to the jurisdiction of the parent company's president.

The American Co.'s own impression of the degree of control it exercises over its subsidiary companies is stated rather concisely in the following instance. The general information manager of the Southern New England Telephone Co. wrote Assistant Vice President W. P. Banning, of the American Co., stating, in part:

During discussions of general information subjects by employee groups the question has been raised as to why the Bell Laboratories should not be operated as a department of the American Telephone & Telegraph Co., as is the long lines department. They have also questioned the advantage or necessity for separate corporations such as the 195 Broadway Corporation and the Bell Securities Corporation.

We feel that our answers may be somewhat inadequate and would appreciate your comment and any desirable amplification. * * *

The American Co. vice president replied, giving the reasons for separate incorporation of the several activities, including the Laboratories. The concluding paragraph of this letter frankly admitted the subservient position of the several American Co. subsidiaries, stating: *

While it has been advantageous to have the work done by a separate company, as a matter of practical operation the Securities Co. has in effect represented the investment security department of the American Telephone & Telegraph Co. and the Bell System, just as the Western Electric Co. has represented the manufacturing department, and the Bell Telephone Laboratories the research and development department.

Summary.

Observation of the Bell System in operation shows that management control is concentrated in the parent company, the American Co. A description of most of its subsidiaries as autonomous corporations is only justified in the strict legal sense, for they function simply as parts of an integrated corporate system completely and directly controlled by the holding company officers. Many of the corporations constituting the Bell System are the result of the statutory requirements of the various States.

It follows that responsibility for Bell System policies and their results rests, initially at least, with the executive officers of the American Co. These executives have continued in possession of that responsibility, practically as a self-perpetuating group, since the company's management was changed in 1907, under the influence of certain investment bankers.

* Letter dated January 30, 1936. See exhibit 250, p. 16

ELIMINATION OF COMPETITION

In connection with the competition encountered by the Bell System in its efforts to monopolize the telephone-communications field in the United States, and in which efforts it was eventually successful in practically all instances, the Bell System considered all efforts of the independent telephone companies as competitive, whether they competed directly by installing duplicate facilities and furnishing telephone services in the same territories served by the Bell companies, or entered the field in territories not yet reached by the Bell companies, in which case they would interfere with the eventual establishment by the Bell System of an interdependent telephone system for supplying the Nation-wide local and long-distance telephone service throughout the United States. The history of telephony in the United States, with respect to relations between the Bell System and the independents, may be divided into five general periods: (1) Competition of Western Union, which ended with the contract of November 10, 1879; (2) the early period of monopoly from 1879 to 1894; (3) the period of competition beginning with the expiration of the basic Bell patents in 1893 and 1894 and continuing until 1913; (4) anti-trust-law enforcement during the period 1913 to 1921; and (5) relations from 1921 to the present.

Early Competition of Western Union.

In 1877 the Western Union Telegraph Co., fearing the loss of its local telegraph business to the new telephone industry due to the competitive potentialities of the new type of communication, organized the American Speaking Telephone Co. as a subsidiary to its Gold & Stock Telegraph Co., and began the development of telephone exchanges throughout the country. In some cities it entered into direct competition with Bell licensees. In others, it purchased a controlling interest in the existing Bell exchange. New exchanges were organized in the Middle West through the Western Electric Manufacturing Co., which was controlled by the Western Union. The telephone exchanges controlled by the Western Union operated under the patents of Elisha Gray and Thomas A. Edison through license contracts. The Western Union extended to its licensees the financial backing necessary to encourage the growth of the business.

In 1878, litigation was pending between the Western Union interests, involving the priority and validity of the telephone patents of each group. This litigation was terminated by agreement on November 10, 1879. Under the terms of the agreement the Western Union admitted the validity of the Bell patents, agreed to withdraw from the telephone field, and to permit the Bell Co. to use all patents owned by it in the field of telephony. This license was exclusive and was to be effective for a period of 17 years, during which time the Western

Union agreed to pay 20 percent of the cost of any new telephone patents developed or acquired by the Bell Co., and was to receive 20 percent of the rentals or royalties received by the Bell Co. for the use by its licensees of telephone instruments.¹ In addition, the Bell Co. agreed to purchase the Western Union's telephone system, and to keep out of the public telegraph-message business. This latter was the chief concern of the Western Union during the period of negotiations. Payments by the Bell interests to Western Union representing royalties under the provisions of this agreement were substantial, being approximately \$7,000,000 over the period from 1879 to 1896.

The precise reasons for the capitulation of Western Union to the Bell System group have never been stated authoritatively. The acquisition by the Bell System of the newly invented Blake transmitter, the superiority of which deprived Western Union licensees of the advantages they had enjoyed with the Edison transmitter, may have been an important factor. It appears possible from information contained in financial publications of the period that the struggle between competing groups of investment capital representatives for exclusive control of the most promising fields of investments, which included electrical communications, may have had an important bearing on Western Union's actions. The scope and character of this conflict of interests for control of portions of the electrical communications business, as summarized by the investigation staff from various available sources, are set forth in the following paragraphs.

During the period 1878-80, the Vanderbilts, William H. and Cornelius, in addition to large holdings in the railroad field, owned controlling stock in the Western Union. The generous profits in the Western Union's national telegraph monopoly attracted competition, the most effective of which was furnished by two companies owned by Jay Gould, the Atlantic & Pacific Telegraph Co., and the American Union Telegraph Co. The Atlantic & Pacific Co. was organized in 1865, and by the early 1870's had a transcontinental line pieced together between New York and San Francisco, using the Union Pacific right-of-way over a considerable part of the distance. It was prepared to capitalize its nuisance value by selling out to Western Union, but the panic of 1873 temporarily hampered the latter, and the offer was refused. The Atlantic & Pacific Co. thereupon fell under the influence of the Union Pacific Railroad, which was controlled by Jay Gould. In 1874 Gould induced T. T. Eckert to leave the Western Union for the purpose of building the Atlantic & Pacific Co. into a real competitor of the Western Union. By 1877 it had been built into a system comprising 35,000 miles of wire. The Western Union, recognizing the growing power of its strong competitor, the Atlantic & Pacific Co., purchased that company late in 1877, paying both in cash and in shares of Western Union stock.

Having purchased the Gould competitor in the telegraphic field, the Western Union, late in 1877, turned to the problem of potential competition with the Bell Telephone System, and as heretofore stated, had established itself in a strong competitive position in the telephone field in 1878. It appeared that the suit brought by Bell

¹ Suit was instituted in 1883 by Western Union on this phase of the contract for its share of the licensees' stocks received by the Bell companies under the permanent license contracts. The suit was finally settled in 1913 through payment by the American Co. to Western Union of \$5,279,217, of which \$1,700,000 was paid in lieu of surrendering some 20,000 shares of stock of the associated companies, and the balance covered principally dividends relating to the shares awarded to Western Union and interest to date of settlement. See *Western Union Telegraph Co. v. American Bell Telephone Co.*, 185 Fed. 425, and exhibit 1362-A, pp. 32-50.

against Dowd and the Western Union would be a long-drawn-out legal battle over patents. However, on May 15, 1879, 8 months after Bell brought suit against Western Union, Gould launched another attack upon Western Union in the telegraph field by the organization of the American Union Telegraph Co. With the aid of able stock-market manipulators, and through the columns of his "New York World," Gould attacked the credit of the Western Union and drove its stock quotations down. Apparently, he availed himself of every conceivable weakness of the telegraph company's position, one of which was its pending suit with the Bell Telephone Co.² Gould also began buying telephone exchanges, operating under Bell licenses, with an implied threat to throw his financial support behind the telephone's competitive threat to Western Union's telegraph monopoly. The Bell suit had been filed on September 12, 1878. Gould's American Union Telegraph Co. was organized on May 15, 1879. Within 15 days after the organization of the latter company, Western Union approached Bell with a compromise, which resulted in the settlement of November 10, 1879. Apparently, Gould's threat to use the telephone as a competitive threat to Western Union's telegraph monopoly, together with his frontal attack upon the Western Union through the organization of the American Union Telegraph Co., hastened the Western Union's decision to protect its telegraph monopoly by withdrawing from the telephone field and securing a promise from the Bell Co. to refrain from all competition in the telegraphic field.³

The Early Period of Monopoly.

The Bell System was not without opposition, even with the retirement of Western Union from the telephone field. As soon as the Bell patent was granted in 1876 a host of rival companies sprang up all over the country. When the existence of competition became known, suits for infringement of Bell patents were filed. From the fall of 1877, when the first suit was filed, until 1893, when the original Bell patent expired, over 600 suits were brought. For the most part, this competition was eliminated as soon as suit was brought, since many of the defendants promptly went out of business. Only a small number of suits were prosecuted to final hearing. Only 5 of the 600 cases reached a hearing in the United States Supreme Court. The most important of these suits were the following: *Dolbear v. American Bell Telephone Co.*; *Molecular Telephone Co. v. American Bell Telephone Co.*; *Clay Commercial Telephone Co. v. American Bell Telephone Co.*; and *Overland Telephone Co. v. American Bell*. These suits were combined, for purposes of hearing, with others, and an opinion rendered on March 19, 1888,⁴ in which, by a 4 to 3 decision, the United States Supreme Court upheld the Bell patents in their entirety. Several Government suits were brought against the Bell between 1885 and 1894, alleging, among other things, that Bell was

² For a later frank admission, by counsel for a Bell licensee, of the decisive superiority of the Western Union over Bell in 1879, see exhibit 2096-F, ch. 2, p. 25. In *Postal Telegraph-Cable Co. v. Delaware & Atlantic Telegraph and Telephone Co.*, counsel for defendant stated that "both companies (Bell and Western Union) were then in the field at all important points, and in the competition that must have followed, it was obvious that the Bell Co. would ally itself with whatever telegraph company could be enlisted against the Western Union." Vall also made the following significant statement (in 1901), concerning this 1879 competition: "The original Bell Co., in spite of the wealth, prestige, position, and power of the Western Union at that time, and without any aid from the patent holding, succeeded in getting possession of the telephonic field." (Letter from Vall to Crane, president's file No. 18348.)

³ Despite this strategy on behalf of Western Union in agreeing to the Bell settlement on Nov. 10, 1879, Gould secured control of the Western Union in a little over a year thereafter.

⁴ 126 U. S. Repts.

not the original inventor of the telephone. The suits were not prosecuted to a final conclusion.⁵

From November 10, 1879, until the expiration of the basic Bell patents in 1893 and 1894, the Bell System enjoyed a monopoly in the telephone field. Under such monopoly it was able to control the rate of expansion of the telephone industry in the United States, as well as the charges for rendering telephone service, within the limitation of what the traffic would bear. From the date of inception of the telephone industry, in 1877, to the end of 1894, American Bell Telephone Co. and its predecessor Bell companies paid dividends in the amount of \$25,895,811⁶ as compared with cash invested in the business by the stockholders of \$16,135,808.⁷ In addition, at the end of 1894, the stockholders' equity, as reflected by the American Bell Telephone Co.'s annual report to its stockholders, was more than \$38,200,000, or approximately \$191 per share of outstanding capital stock. These figures are indicative of the profitable character of the telephone business during this period. The subject of profits is discussed in chapter 18 of this report.

TABLE 29.—*Distribution, by States and Territories of independent commercial telephone systems, in operation in 1902, according to year in which established for the period 1883-1902, inclusive*

State or Territory (a)	Total (b)	1902 (c)	1901 (d)	1900 (e)	1899 (f)	1898 (g)	1897 (h)	1896 (i)	1895 (j)	1894 (k)	1893 (l)
Alabama.....	43	10	10	6	2	3	2	4	5	1	—
Arizona.....	10	2	3	1	—	3	—	—	1	—	—
Arkansas.....	76	7	15	16	8	8	4	7	2	4	2
California.....	10	1	1	1	1	—	—	1	1	—	1
Colorado.....	8	3	2	2	—	—	—	1	—	—	—
Connecticut.....	4	—	—	—	1	1	1	—	—	1	—
Delaware.....	3	—	1	—	—	1	—	—	1	—	—
Florida.....	23	2	3	4	2	5	2	2	1	—	—
Georgia.....	71	10	8	11	10	12	8	9	3	—	—
Idaho.....	5	1	—	—	1	1	—	—	—	—	—
Illinois.....	240	27	42	39	31	29	30	13	20	5	2
Indian Territory.....	37	10	11	3	4	6	1	2	—	—	—
Indiana.....	261	37	47	48	31	19	29	19	20	9	—
Iowa.....	240	60	50	41	31	16	10	12	10	6	2
Kansas.....	161	37	33	31	23	13	9	3	10	2	—
Kentucky.....	84	14	14	15	9	9	3	9	7	1	2
Louisiana.....	14	2	1	2	3	1	2	3	—	—	—
Maine.....	21	4	3	3	2	1	2	1	2	—	—
Maryland.....	15	—	3	—	1	3	2	2	1	3	—
Massachusetts.....	8	—	1	1	1	1	1	2	—	—	—
Michigan.....	76	10	8	12	10	10	6	8	6	4	1
Minnesota.....	118	26	17	18	17	22	6	3	7	—	—
Mississippi.....	32	6	7	2	1	3	6	4	1	1	—
Missouri.....	225	29	45	24	25	26	23	28	14	7	—
Montana.....	4	—	—	1	1	1	—	—	—	—	1
Nebraska.....	3	26	17	5	12	6	3	—	3	1	—
Nevada.....	6	2	1	—	1	—	1	—	—	—	—
New Hampshire.....	14	1	—	3	3	1	2	2	1	1	—
New Jersey.....	28	5	3	1	4	3	4	3	3	2	—
New Mexico.....	12	1	2	4	1	—	—	1	2	1	—
New York.....	171	38	29	25	18	15	15	8	13	8	—
North Carolina.....	71	11	8	11	6	14	6	5	8	1	—
North Dakota.....	29	9	8	1	2	4	1	2	1	—	—
Ohio.....	234	30	40	51	39	21	18	10	17	4	2

Source: Department of Commerce and Labor, Bureau of the Census: Special Reports, Telephones and Telegraphs, 1902, table 10, p. 9.

⁵ For detailed discussion of patent litigation during this period, see exhibit 1989, pp. 1-19.

⁶ Dividends of American Bell Telephone Co. to December 31, 1894, were \$25,887,811, and \$8,000 was paid by a predecessor company, New England Telephone Co., in 1879. See exhibit 1360-B, p. 389, and exhibit 1360-A, p. 18.

⁷ Represented by \$15,605,977 received by American Bell Telephone Co. for stock sold, including the face amount of convertible notes retired through conversion into stock, to December 31, 1894, and \$529,831 paid in for stock sold for cash by predecessor corporations, but does not include the cash value of \$400,000 par value of stock initially issued in 1878, by predecessor corporations for Bell patents or patent rights, when the cash sales of their stock were made at 50 percent of par or less. See exhibit 1360-B, schedule 26-A and p. 377.

TABLE 29.—*Distribution, by States and Territories of independent commercial telephone systems, in operation in 1902, according to year in which established for the period 1883-1902, inclusive—Continued*

State or Territory (a)	Total (b)	1902 (c)	1901 (d)	1900 (e)	1899 (f)	1898 (g)	1897 (h)	1896 (i)	1895 (j)	1894 (k)	1893 (l)
Oklahoma.....	23	4	9	3	4	2		1			
Oregon.....	16	2	5	2			1	1	3	1	1
Pennsylvania.....	73	8	6	16	5	13	8	9	5	3	
Rhode Island.....	1	1									
South Carolina.....	36	5	4	8	5	2	2	4	3	1	1
South Dakota.....	47	11	9	8	6	5	3	2	1	1	
Tennessee.....	28	3	3	9	2		7	1		2	
Texas.....	156	27	34	26	20	19	8	8	7	2	1
Utah.....	4			1			1	1	1		
Vermont.....	30		3	6	9	4	2	1	3	1	
Virginia.....	65	16	9	7	7	7	8	2	2	3	
Washington.....	5	1	2	1					1		
West Virginia.....	62	7	7	10	5	10	7	4	4		1
Wisconsin.....	139	21	25	28	16	14	10	9	9	3	
Wyoming.....	1	1									
United States.....	3, 113	528	549	508	380	334	254	207	199	80	18

State or Territory (a)	1892 (m)	1891 (n)	1890 (o)	1889 (p)	1888 (q)	1887 (r)	1886 (s)	1885 (t)	1884 (u)	1883 (v)
Arkansas.....				1	1	1				
California.....	2		1							
Florida.....	1		1							
Idaho.....			1							
Illinois.....	1								1	
Indiana.....	1			1						
Iowa.....		1		1						
Kentucky.....			1							
Maine.....				2			1			
Michigan.....										1
Minnesota.....		1				1				
Mississippi.....										
Missouri.....	1	1	1		1					
Nevada.....	1									
New York.....		1			1					
North Carolina.....							1			
North Dakota.....		1								
Ohio.....			1					1		
South Carolina.....								1		
South Dakota.....							1			
Tennessee.....					1					
Texas.....			1	1		1	1			
Vermont.....									1	
Virginia.....	1				2		1			
West Virginia.....	3	3						1		
Wisconsin.....	1				2			1		
United States.....	12	8	7	6	8	3	5	4	2	1

NOTE.—The text accompanying the above table contains the following modifying statement: "Table 10 (table 29 above) shows that of the independent commercial systems still in existence, the first was established in 1883, and that between 1883 and 1893, inclusive, 74 such systems were organized. Inasmuch, however, as the Bell patents did not expire until 1893, it might seem a misnomer to call these 74 systems independent, as it is perhaps hardly possible that they all operated independently of the American Bell Telephone Co."

TABLE 30.—Distribution by States and Territories of mutual telephone systems in operation in 1902, according to year in which established for the period 1881–1902, inclusive ¹

State or Territory (a)	Total (b)	1902 (c)	1901 (d)	1900 (e)	1899 (f)	1898 (g)	1897 (h)	1896 (i)	1895 (j)	1894 (k)	1893 (l)	1891 (m)	1888 (n)	1883 (o)	1881 (p)
Alabama.....	4	2		2											
Arizona.....	1					1									
Arkansas.....															
California.....	6	1		1		1	1	1			1				
Colorado.....	3	1			1				1						
Connecticut.....	1				1										
Delaware.....															
District of Columbia.....															
Florida.....	2		1				1								
Georgia.....	6	3	2	1											
Idaho.....	1	1													
Illinois.....	138	36	33	34	13	14	3	4			1				
Indian Territory.....															
Indiana.....	105	37	41	17	4	3	2			1					
Iowa.....	170	83	58	18	6	2		1			1				1
Kansas.....	11	5	2	3	1										
Kentucky.....	35	3	8	9	4	5	1	2	2	1					
Louisiana.....	1				1										
Maine.....	4	2	1	1											
Maryland.....	4		2		1				1						
Massachusetts.....															
Michigan.....	33	13	8	3	4		1		2	1	1				
Minnesota.....	31	12	9	3	4	3									
Mississippi.....	3				1			1	1						
Missouri.....	90	21	26	13	8	6	9	4	1			2			
Montana.....	2	2													
Nebraska.....	32	12	13	4	1	2									
Nevada.....	2		1		1										
New Hampshire.....															
New Jersey.....															
New Mexico.....															
New York.....	88	7	19	24	10	13	2	3	2	2	2	2		1	1
North Carolina.....	12	1	5	2	1	3									
North Dakota.....	3	1	1												
Ohio.....	49	13	13	16	2	4	1								
Oklahoma.....	1	1													
Oregon.....	5	3	1	1											
Pennsylvania.....	20	2	6	6	2	1	2		1						
Rhode Island.....															
South Carolina.....	6	2	1	2		1									
South Dakota.....	7	7													
Tennessee.....	13		3	1	2	2	2	1	2						
Texas.....	12	2	2	3	2	3									
Utah.....															
Vermont.....	6			1	1	1	1	1		1					
Virginia.....	22	3	2	6	4	2	2	1					1		
Washington.....															
West Virginia.....	21	6	3	2	4	3		2			1				
Wisconsin.....	43	13	8	6	5	5	4		2						
Wyoming.....	1			1											
United States.....	994	295	269	181	84	75	32	21	15	7	9	2	1	1	2

¹ Source: Department of Commerce and Labor, Bureau of the Census, Special Reports, *Telephones and Telegraphs*, 1902, pp. 9, 10.

TABLE 31.—Total number of telephone systems and telephones in the Bell System and all other systems and lines for the period 1902–32, inclusive ¹

Year (a)	Number of systems and lines			Number of telephones		
	Total (b)	Bell (c)	All others (d)	Total (e)	Bell (f)	All others (g)
1902.....	9, 136	44	9, 092	2, 371, 044	1, 317, 178	1, 053, 866
1907.....	22, 971	175	22, 796	6, 118, 578	3, 132, 063	2, 986, 515
1912.....	32, 233	176	32, 057	8, 729, 592	5, 087, 027	3, 642, 565
1917.....	53, 234	145	53, 089	11, 716, 520	7, 326, 858	4, 389, 662
1922.....	57, 253	126	57, 227	14, 347, 395	9, 514, 813	4, 832, 582
1927.....	60, 148	125	60, 123	18, 522, 767	13, 726, 056	4, 796, 711
1932.....	44, 828	125	44, 803	17, 424, 406	13, 793, 229	3, 631, 177

¹ Source: United States Census of Electrical Industries, Telephones, and Telegraphs, 1932.

² Not including Bell-controlled companies. Previous to 1922 these were included with the Bell System, but for 1932, 1927, and 1922 they are classified under "All others."

TABLE 32.—Total telephones in United States at Dec. 31 of each year for the period 1876-1934, inclusive¹

Dec. 31—	Com- pany ²	Private line	Bell owned	Service	Connect- ing	Sub- scribing	Bell con- necting	Grand total	Noncon- necting (esti- mated)
1876	2,593		2,593					2,593	
1877	9,283		9,283					9,283	
1878	26,265		26,265					26,265	
1879	30,872		30,872					30,872	
1880 ³	47,880		47,880					47,880	
1881	71,387		71,387					71,387	
1882	97,728		97,728					97,728	
1883	123,625		123,625					123,625	
1884	134,847	12,868	147,715					147,715	
1885	141,757	13,994	155,751					155,751	
1886	151,012	16,121	167,133					167,133	
1887	163,086	17,594	180,680					180,680	
1888	175,968	18,998	194,966					194,966	
1889	190,107	21,396	211,503					211,503	
1890	204,597	23,290	227,887					227,887	
1891	216,543	22,793	239,336					239,336	
1892	232,780	28,015	260,795					260,795	
1893	237,987	28,444	266,431					266,431	
1894	244,162	26,219	270,381					270,381	15,000
1895	282,446	27,056	309,502					309,502	30,000
1896	325,968	28,303	354,301					354,301	50,000
1897	385,058	30,155	415,213					415,213	100,000
1898	466,077	29,721	495,798					495,798	185,000
1899	633,918	32,815	666,733		10,000		10,000	676,733	328,000
1900	801,947	33,964	835,911		20,000		20,000	855,911	500,000
1901	1,021,820	39,292	1,061,112		47,961		47,961	1,109,073	692,000
1902	1,279,241	37,937	1,317,178		84,021		84,021	1,401,199	969,845
1903	1,526,957	36,984	1,563,941		120,936		120,936	1,684,877	1,124,000
1904	1,801,667	36,367	1,838,034		167,213		167,213	2,005,247	1,348,000
1905	2,243,576	41,011	2,284,587		246,337		246,337	2,530,924	1,596,000
1906	2,729,116	44,431	2,773,547		297,218		297,218	3,070,765	1,862,000
1907	2,965,546	46,965	3,012,511	71,173	755,316		826,489	3,839,000	2,279,578
1908	3,130,154	46,240	3,176,394	85,091	1,103,144		1,188,235	4,364,629	2,119,000
1909	3,476,424	45,655	3,522,079	111,823	1,508,790		1,620,613	5,142,692	1,853,000
1910	3,887,690	45,366	3,933,056	142,978	1,806,685		1,949,663	5,882,719	1,752,648
1911	4,306,320	45,517	4,351,837	167,851	2,112,937		2,280,788	6,632,625	1,719,093
1912	4,757,071	46,732	4,803,803	196,376	2,455,895		2,652,271	7,456,074	1,518,862
1913	5,206,791	48,017	5,254,808	208,418	2,669,791		2,878,209	8,133,017	1,409,492
1914	5,535,857	48,996	5,584,853	227,151	2,836,989	9,619	3,073,759	8,658,612	1,387,806
1915	5,919,452	48,648	5,968,100	236,438	2,946,673	21,274	3,204,385	9,172,495	1,351,002
1916	6,494,591	50,899	6,545,490	250,436	3,051,266	46,418	3,348,120	9,893,610	1,347,822
1917	6,978,396	53,194	7,031,590	270,311	3,173,837	63,898	3,508,046	10,539,576	1,244,066
1918	7,148,722	53,035	7,201,757	291,906	3,498,662	73,674	3,864,242	11,065,999	1,611,638
1919	7,687,219	51,940	7,739,159	296,289	3,685,372	74,927	4,056,588	11,795,747	872,727
1920	8,277,600	56,379	8,333,979	299,714	3,885,658	82,584	4,267,956	12,601,935	809,444
1921	8,856,378	57,777	8,914,155	292,418	4,084,794	88,852	4,466,064	13,380,219	494,964
1922	9,461,351	53,462	9,514,813	287,453	4,152,003	96,296	4,555,752	14,050,565	445,288
1923	10,352,364	53,791	10,406,155	287,544	4,204,489	101,913	4,593,946	15,000,101	369,353
1924	11,184,594	57,724	11,242,318	291,869	4,282,997	89,366	4,664,252	15,906,550	302,311
1925	11,974,405	60,819	12,035,224	290,224	4,328,753	66,023	4,695,000	16,720,224	215,694
1926	12,790,427	65,825	12,816,252	287,798	4,429,165	41,071	4,758,034	17,574,286	171,882
1927	13,648,907	77,149	13,725,056	286,814	4,309,594	43,022	4,639,430	18,365,486	157,826
1928	14,439,640	85,008	14,524,648	287,731	4,353,408	31,248	4,672,387	19,197,035	144,260
1929	15,315,970	98,035	15,414,005	287,595	4,366,188	29,066	4,682,849	20,096,854	136,156
1930	15,583,101	98,958	15,682,059	276,398	4,125,170	14,674	4,416,242	20,098,301	103,275
1931	15,302,167	105,268	15,407,425	266,852	3,924,000	15,492	4,206,344	19,613,769	93,849
1932	13,710,169	83,060	13,793,229	242,996	3,424,958		3,667,954	17,461,183	86,192
1933	13,079,711	83,194	13,162,905	231,352	3,240,383		3,471,735	16,634,640	76,218
1934	13,378,103	79,785	13,457,888	230,988	3,205,817		3,436,805	16,894,693	74,152

¹ Source: American Telephone & Telegraph Co. comptroller's annual report for 1934, pt. I, statement No. 45.² Prior to 1907, company stations included "Service stations."³ First official report.⁴ Includes subscribing companies.**Period of Competition (1894-1913).**

Although the Bell interests had preempted many of the lucrative and populous sections of the country during the years of monopoly by obtaining franchises and establishing telephone service, numerous independent telephone companies, as well as a few independent telephone manufacturing concerns, sprang up throughout the country immediately after the expiration of Bell patents in 1893 and 1894.

These concerns pursued vigorously the promotion of telephone service in many regions not yet reached by the Bell System. In a large number of instances they entered into competition in territories where the Bell System had already established telephone service. In 1893, 17 years after the origin of telephone communication, there were 266,431 Bell-owned stations in the United States. Ten years later, at the close of 1902, there were 1,317,178 Bell-owned stations, and 1,053,866 independent stations in the United States. During the period 1902-7, the development of independent properties kept pace with the development of the Bell System. At the end of 1907, the Bell System owned 3,132,063 stations, compared to 2,986,515 stations owned by independents.⁸ Tables 29 and 30, on pages 126 and 128, indicate the year of establishment of independent commercial systems which were still operating in 1902, and the same data for mutual systems, by years in which they were established, from 1881 to 1902. Table 30 shows that there were 6 mutual systems established between 1881 and 1892, inclusive, which were still in existence in 1902. From 1893 to 1902, a period of 10 years, there were 3,057 independent systems established and 988 mutual systems. The greatest activity in the establishment of non-Bell systems occurred in Illinois, Indiana, Ohio, Kansas, Minnesota, Missouri, Iowa, Texas, and Wisconsin. Table 31, on page 128, shows the total number of telephone systems and telephone stations in the Bell system and in independent systems at 5-year intervals, for the period 1902-32, inclusive. This table shows that the proportion of independently owned to Bell-owned stations was greater in 1907 than in any other period. Subsequent to 1907 the independent movement did not keep pace with that of the Bell System. Table 32, on page 129, shows the total number of telephones of Bell System connecting companies and nonconnecting companies for the period 1876-1934, inclusive. The number of non-connecting telephones began to diminish after 1907. This movement toward connection with Bell System service has continued to the present time. Today there are only some 70,000 stations that do not connect with the Bell System. These changes in the relative size of Bell and independent companies, both in number of stations controlled by either group and in the number of nonconnecting stations, are manifestations of policies pursued by the Bell System in its attempt to gain control over the larger part of telephone communications in the United States. These policies will receive attention subsequently.

The period from 1894 to 1913 also witnessed the rise of independent manufacturers of telephone apparatus and equipment.

Attempts to Organize a Nation-Wide Competitive Communications System to Oppose the Bell System.

The Bell System's principal advantage over independents lay in its interconnected toll lines which provided the only available effectively integrated network for long-distance telephone communication. This advantage would be minimized in the event the independents could consolidate and connect their systems through an independent long-distance network having adequate financial backing. Recognizing this state of affairs, the independents, in 1897, met at Fort Wayne, Ind., to form a mutual organization with the following stipulated objectives, among others: (1) A national association of the independ-

⁸ See table 31, p. 128.

ent telephone exchanges of the United States for mutual protection and development; (2) the construction of long-distance toll lines to connect the independent exchanges; (3) an independent long-distance service connecting the large commercial centers, a field occupied exclusively by the Bell companies.

The history of the Telephone, Telegraph & Cable Co. is an illustration of an attempt to organize a Nation-wide independent telephone system to compete with the Bell System. This company was organized in 1899, under the laws of the State of New Jersey, with an authorized capital stock of \$30,000,000, and with the stated purpose of combining the independent telephone companies of the country into a Nation-wide organization, including a Nation-wide long-distance telephone service. The incorporators were William J. Latta and Martin Maloney of Philadelphia and James E. Hayes of Camden. At about the date of its organization approximately \$3,000,000, or 10 percent of the authorized capital stock was subscribed for by various individuals, payable 5 percent upon subscription, 5 percent on February 1, 1900, and the balance as called for by the directors. Initially the support of a Philadelphia group of investors headed by Messrs. Widener, Elkins, and Dolan, was obtained; but these interests withdrew from the enterprise in December 1899. Financial publications of the period indicate that the withdrawal of Messrs. Widener, Elkins, and Dolan was founded upon their obligation to certain financial interests in New York which were unfavorable to the development of a strong independent telephone system to compete with the Bell System.⁹

After its organization, the Telephone, Telegraph & Cable Co. obligated itself to finance and acquire control of the Knickerbocker Telephone & Telegraph Co., Boston and New York Telephone & Telegraph Co., and Massachusetts Telephone & Telegraph Co., which companies had been organized for the purpose of entering the local telephone business in Boston and New York City, with connecting long-distance telephone lines, in competition with the Bell System. Shortly thereafter the cable company also purchased a controlling interest in the Erie Telegraph & Telephone Co., which held a controlling capital-stock interest in five important Bell System licensees.

After the withdrawal of the Widener, Elkins, and Dolan support, the cable company was unable to adequately finance its subsidiary companies, which forced the Erie Co. to make short-term loans from banks and then borrow \$9,000,000 from the Old Colony Trust Co. on 1-year notes due in January 1902, secured principally by the stock of its Bell licensee subsidiaries, in order to retire the bank loans and provide additional funds. When these collateral notes were sold by the Erie Co., plans for reorganization of that company and the cable company were under consideration by the officers and directors.

Shortly thereafter, through the efforts of C. T. Cutler, president of the New York Telephone Co., arrangements were made for the formation of a syndicate of Bell System companies, consisting of the New England Telephone & Telegraph Co., New York & New Jersey Telephone & Telegraph Co., the American Telephone & Telegraph Co., and the Union Subway Construction Co., a subsidiary of the New York Telephone Co. Mr. C. W. Morse, president of the Ameri-

⁹ See Commercial and Financial Chronicle, vol. 69, p. 1151.

can Ice Co. and New Amsterdam Trust Co. and a director of the cable company, was engaged to attempt to purchase two-thirds or more of the outstanding capital stock of the cable company at 50 percent of the cash paid in therefor by the stockholders, without revealing the fact that he represented the Bell interest, although the required funds were to be supplied by the Bell companies. The offer to purchase this stock of the cable company by Morse was made on August 26, 1901,¹⁰ and was accepted by the required number of stockholders in September. The syndicate of Bell System companies was then formed on September 25, 1901, and acquired the controlling capital-stock interest in the cable company purchased for it by Morse.¹¹

Under a subsequent plan of reorganization of the Erie Co., proposed by Kidder, Peabody & Co., and effective in January 1902, its assets were acquired by a new company, Western Telephone & Telegraph Co., and control of the new company was acquired by the American Co. in consideration of \$13,000,000 of its 4-percent collateral-trust bonds which were delivered to Kidder, Peabody & Co., the proceeds of which were used to pay the collateral notes of the Erie Co. and provide additional working capital for its newly organized successor.¹² Later, the syndicate of Bell companies purchased the minority stockholdings in the cable company and dissolved that company, thereby eliminating this attempt to create a competing telephone system.

Effects of Competition.

The expiration of the basic Bell patents was the signal for many attempts by others to exploit the telephone-service profit opportunities in areas so far not served by Bell companies; to try to compete for this business in areas already served by Bell companies; and to interconnect these independent exchanges into independent toll systems of larger or smaller extent; and brought with it the development of telephone-manufacturing companies furnishing improved devices made possible by the expiration of the basic Bell patents.

Long-distance telephony was stimulated by the desire of the Bell Co. to connect its numerous exchanges by a system of long lines into a Nation-wide telephone system.¹³ Impetus was given to this movement by the rising independent exchange and toll development. The Bell Co.'s acquisition of the patent rights to the loading coil, which was developed around 1900 and which improved the quality of transmission and increased the distance of effective telephone conversation, together with the development of the mechanical repeater, enabled the Bell Co. to greatly extend the range of its interexchange toll telephone system to the exclusion of others.

During the period of monopoly the Bell System had concentrated its development in the large centers. Rural service was inaugurated by the independents. In 1902 there were 266,968 rural telephone stations, including commercial lines, mutual systems, and independ-

¹⁰ In connection with this offer, the following is quoted from the Boston News Bureau of September 3, 1901: "Mr. Morse believes that the time is ripe for telephone competition in the East, and if nobody else is willing to undertake it, he is willing to go ahead, provided the terms of his offer are accepted. He says that if the terms of his offer are not accepted, he shall take no further action in the matter, but if they are accepted, he shall go ahead in the telephone development. He believes there is room for two companies, and that opposition telephone companies properly conducted, are no real harm to the Bell interests. There is suspicion in some quarters that Mr. Morse's offer is in behalf of Bell interests, but we think this suspicion is unfounded." See exhibit 1362-A, appendix 4.

¹¹ *Ibid.*, pp. 59-64.

¹² *Ibid.*, pp. 67-76.

¹³ See ch. 12 for details.

ent farmers' lines.¹⁴ In 1907 this had been increased to 1,464,773 stations.¹⁵

With the expiration of the basic Bell patents and the expansion of competition consequent upon such expiration, the rates which had been charged by the operating companies of the Bell System during the period of monopoly were substantially reduced. The existence of duplicate exchanges in many cities brought on rate wars. In 1895, the first year of competition, the total operating revenue per telephone station in the Bell System was \$88. By 1900 it had dropped to \$63 per station, and by 1907 to \$43 per station. The lowest operating revenue per station was reached in 1914 and 1915, when it was \$41 per station. The decline in total operating revenue per telephone station is set out graphically on chart 9, page 135. These changes in operating revenue per station were the result of many interacting causes, chief among which were the expiration of the basic patents, the introduction of party line and measured-rate service, and the desire to tap broader markets available at the lower rates.

One result of the period of competition was duplication of exchange telephone service. Such duplication was wasteful from the viewpoint of investment and placed a burden on both the telephone operating companies and the rate payer. This condition had reached such aggravating proportions by 1910 that the Bell Co., in its annual report to stockholders of that year, indicated that it would be better to accept Government regulation of the telephone industry rather than continue with the hazards attendant upon duplication of exchange facilities.

Bell System Attempts to Eliminate Competition.

During the period 1894-1912 the Bell System employed several methods of meeting the competition of the independents. In the beginning, the Bell System attempted to meet competition by prolonging its patent monopoly and by rapid expansion of its telephonic facilities. With the acquisition of a strong financial interest in the Bell System by the Baker-Morgan group during the period 1902-7,¹⁶ the policy of the company became one of absorption of independents made possible through the possession of adequate financial support, in addition to that referred to above.

In attempts to prolong its patent monopoly after 1894, the Bell System made use of an invention patented by E. Berliner, which added improved features to the microphone. The patent was first applied for in 1877, and the rights of the invention were purchased by the Bell System in the same year. The patent was not issued until November 17, 1891. Since the most efficient telephone transmitter depended upon microphonic action, great hopes were entertained by the Bell System that this patent would preserve its monopoly until the expiration date in 1908. Soon after its issue, suit for annulment was brought by the United States Government on the grounds that its issuance was wrongfully delayed in the Patent Office and that the American Bell Telephone Co. was a party to the delay. The American Co. successfully defended this suit.¹⁷ Suit was then brought in

¹⁴ See Special Reports of the Bureau of the Census, Departments of Commerce and Labor, Telephones, 1907, p. 24.

¹⁵ *Ibid.*

¹⁶ See ch. 4 for details.

¹⁷ *United States v. American Bell Telephone Co.* (167 U. S. 224).

1895, by the American Bell Telephone Co. against the National Telephone Manufacturing Co. on the same patent. The patent was given such a narrow construction by the court that it was rendered worthless as a device for prolonging the Bell monopoly.¹⁸

Failing in the attempt to extend its patent monopoly through the Berliner invention relating to microphones, the Bell System placed the burden of attempting to prolong its patent monopoly on the Western Electric Co. This latter company brought suits for infringement against companies using telephone appliances such as switches, signalling apparatus, call boxes, etc. These suits extended over the period 1894 to 1911. In all, 74 suits were brought upon such patents, of which 5 were instituted by the American Bell Co. and 69 by the Western Electric Co. All of these suits did not come to a final decision.¹⁹ The attempt of the Western Electric Co. to prolong the Bell System's monopoly by means of suits for patent infringement did not meet with complete success.

The Bell System also undertook rapid expansion of its facilities in order to meet the competitive threat. The extent of its expansion during the period 1894 to 1907 is demonstrated by a comparison of the rate of growth in number of telephone stations during that period with the rate of growth from 1885 to 1894, and by a comparison of the annual increase in telephone plant during the same periods. The annual percent increase in telephone stations in the Bell System from 1885 to 1894, inclusive, shown on table 33, below, averaged 6 percent, as compared to 22 percent for the period 1895 to 1906, inclusive. The annual average expansion of telephone plant in the Bell System during the period 1885 to 1894, inclusive, shown on table 34, page 138, was 8 percent as compared to 15 percent for the period 1895 to 1906, inclusive.

The Bell System supplemented its policy of expansion during the period 1894 to 1906, inclusive, by various practices designed to eliminate competition. Among these were (1) propaganda campaigns against independents, (2) refusal to connect with certain independent companies or classes of companies, (3) refusal to sell telephone instruments to non-Bell companies or on the open market and (4) attempts to control independent manufacturers of telephone apparatus and equipment.

¹⁸ 119 Fed. 893. The patent was so construed that it was limited to a microphone having metallic contacts. Since metallic contacts had been replaced by the more efficient carbon electrodes, the effect of the decision was to destroy the usefulness of the patent.

¹⁹ For details see exhibit 1989, pp. 12-19.

CHART 9

BELL TELEPHONE SYSTEM
PER STATION STATISTICS
 FROM COMPANY RECORDS

1885-1894 EARLY PERIOD OF MONOPOLY.
 1894-1913 PERIOD OF COMPETITION.
 1913-1921 PERIOD OF "THE KINGSBURY COMMITMENT"
 1921-1935 PERIOD UNDER WILLIS GRAHAM ACT.

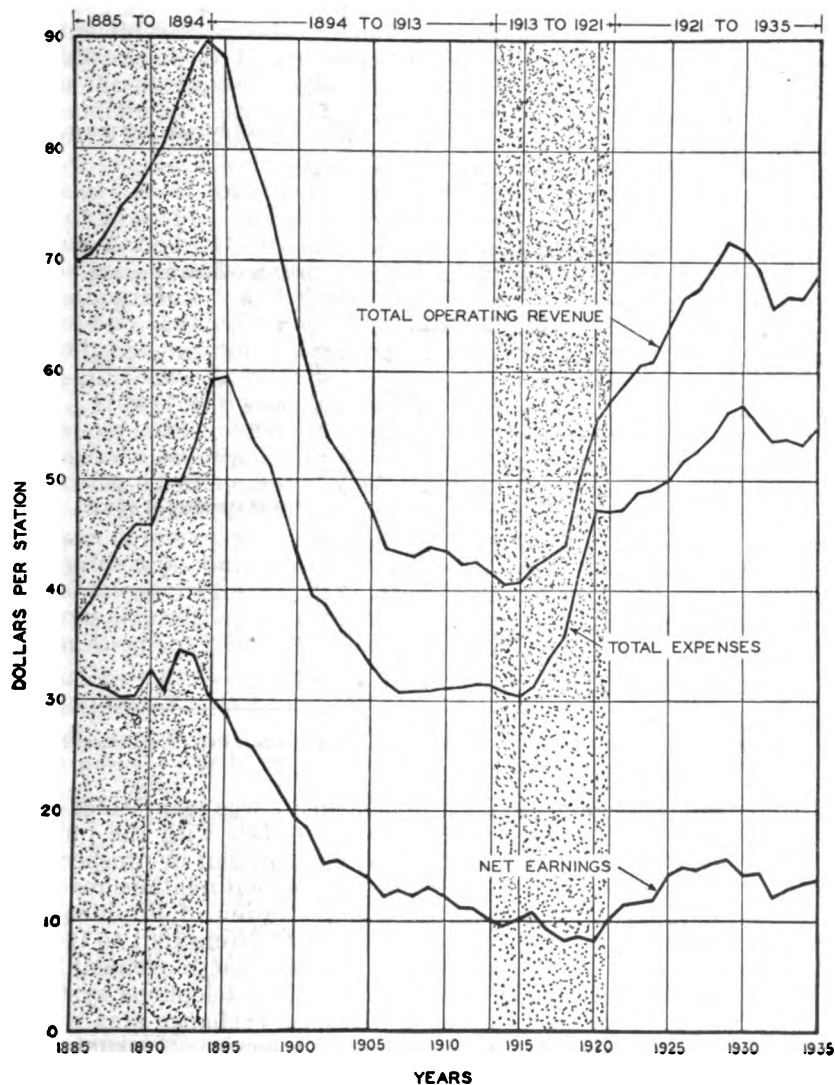


TABLE 33.—Rate of growth in number of Bell Telephone stations, by years for the period 1885 to 1935, inclusive

Year	Number of stations	Increase	Percent increase
1885.....	155,751	8,036	5.44
1886.....	167,133	11,382	7.31
1887.....	180,680	13,547	8.11
1888.....	194,966	14,286	7.91
1889.....	211,503	16,537	8.48
1890.....	227,857	16,354	7.73
1891.....	239,336	11,479	5.04
1892.....	260,795	21,459	8.97
1893.....	266,431	5,636	2.16
1894.....	270,381	3,950	1.48
1895.....	309,502	39,121	14.47
1896.....	354,301	44,799	14.47
1897.....	415,213	60,912	17.19
1898.....	495,798	80,585	19.41
1899.....	666,733	170,935	34.48
1900.....	835,911	169,178	25.37
1901.....	1,061,112	225,201	26.94
1902.....	1,317,178	256,066	24.13
1903.....	1,563,941	246,763	18.73
1904.....	1,838,034	274,093	17.53
1905.....	2,294,587	446,553	24.30
1906.....	2,773,547	488,960	21.40
1907.....	3,012,511	238,964	8.62
1908.....	3,176,394	163,883	5.44
1909.....	3,522,079	345,685	10.88
1910.....	3,933,066	410,977	11.67
1911.....	4,351,837	418,781	10.65
1912.....	4,803,803	451,966	10.39
1913.....	5,254,808	451,005	9.39
1914.....	5,584,853	330,045	6.28
1915.....	5,968,110	383,257	6.86
1916.....	6,545,490	577,380	9.67
1917.....	7,031,530	486,040	7.43
1918.....	7,201,757	170,227	2.42
1919.....	7,739,159	537,402	7.46
1920.....	8,333,979	594,820	7.69
1921.....	8,914,155	580,176	6.96
1922.....	9,514,813	600,658	6.74
1923.....	10,406,155	891,342	9.37
1924.....	11,242,318	836,163	8.04
1925.....	12,035,224	792,906	7.05
1926.....	12,816,252	781,028	6.49
1927.....	13,726,056	909,804	7.10
1928.....	14,524,648	798,592	5.82
1929.....	15,414,005	889,317	6.12
1930.....	15,682,059	268,053	1.74
1931.....	15,407,425	274,634	1.75
1932.....	13,793,229	1,614,196	10.48
1933.....	13,162,905	630,324	4.67
1934.....	13,457,888	294,983	2.24
1935.....	13,923,301	465,413	3.46

Figures in italic indicate decrease rather than increase.

SOURCE: American Telephone & Telegraph Co., Comptroller's 1935 Annual Reports, statement No. 45, total Bell-owned stations.

Bell System propaganda against independents was many-sided. It was directed at undermining independent interests with the public, with bankers, with legislative bodies and with present or prospective investors. This phase of Bell System—*independent relations* reached a high degree of intensity during the administration of President F. P. Fish of the American Telephone & Telegraph Co. from 1901 to 1907.²⁰

A more direct means of curbing the independent movement was Bell System refusal to connect with independent telephone systems for the exchange of messages either in the local exchange area where duplicate facilities existed or for long distance service. Inasmuch as the Bell System was the pioneer in the long distance field, refusal to connect with independents confined them within the limits of the particular territory served. This practice continued without change during the period 1894-1906, inclusive, and with some exceptions,

²⁰ For a detailed description of Bell System propaganda against independents during this period see exhibit 1360-A, pp. 244-249; and exhibit 1362-A, pp. 103-170.

until action by the State legislatures,²¹ as of various dates, and by the Department of Justice in 1912 and 1913, forced the Bell System to make connections with noncompeting independents.

Another weapon employed by the Bell System in fighting independents was refusal, until 1908, to sell either telephones or telephonic appliances to non-Bell companies or on the open market. The 1882 contract between the American Bell Telephone Co., predecessor of the American Co., and the Western Electric Co., precluded the latter company from selling telephone apparatus and equipment manufactured by it to any except Bell System licensees.

This refusal to sell equipment to independents, encouraged the establishment of independent telephone manufacturing companies upon the expiration of the Bell patents. The three most important manufacturers during this period were the Kellogg Switchboard & Supply Co., organized in 1897 under the laws of the State of Illinois; the Automatic Electric Co., organized in 1901 under the laws of the State of Illinois; and the Stromberg-Carlson Telephone Manufacturing Co., organized in 1902 under the laws of the State of New York. Mere refusal of the Bell System to sell telephones, telephonic appliances, and apparatus to independents failed to solve the competitive problem. The American Co. and Western, therefore, attempted to acquire control of two of these three independent manufacturers, the Kellogg and Stromberg companies. Both attempts ultimately failed. Actual purchase of stock control of the Kellogg Co. was made through agents in 1903. However, the sale was set aside on the grounds that it fostered monopoly, stifled competition, and was contrary to public interest.²² The attempted acquisition of the Stromberg Co. occurred in 1907. It was defeated by action of the attorney general of the State of New York, who insisted that the proposed acquisition would result in the creation of monopoly in the manufacture and production of telephone apparatus and equipment, which would be inimical to the best interests of telephone development in that State.²³

Some acquisitions of independents were made by the Bell System during the period 1894-1906, inclusive.

Change in Bell System Policy Toward Independents With Advent of Banking Control in 1907.

With the advent of banking control of the executive committee of the American Co. in 1907, there was a noticeable change in the Bell System policy toward independents from one of meeting competition through rapid expansion to one of absorption and purchase of independents. This change in policy is evidenced by correspondence among company officials and the banking interests²⁴ and by such external manifestations as a reversal of the former policies of refusal to connect with independents, and refusal to sell them Bell System telephone apparatus and equipment.

Table 32 on page 129 shows the number of Bell-owned stations, the number of independently owned stations, and the number of in-

²¹ Laws have been enacted in 34 States providing for compulsory physical connection between telephone companies. These States and the years in which the laws were enacted are: South Carolina, 1904; Georgia, Oklahoma, and Texas, 1907; Maryland, 1910; Kansas, Michigan, Ohio, South Dakota, Washington, and Wisconsin, 1911; Arizona, California, Kentucky, New Mexico, and Oregon, 1912; Colorado, Florida, Idaho, Illinois, Indiana, Maine, Missouri, Montana, Nebraska, New Hampshire, and Pennsylvania, 1913; New Jersey and Virginia, 1914; Minnesota, North Dakota, and West Virginia, 1915; Utah, 1917; and New York, 1919.

²² See *Dunbar et al. v. American Telephone & Telegraph Co.*, 79 N. E. 423 (1906); and 87 N. E. 521 (1909).

²³ A detailed discussion of the Bell System's attempts to control the Kellogg and Stromberg companies is set out in exhibit 2096-D, pp. 19-26.

²⁴ For details see exhibit 2096-F, pp. 169-190.

dependents connecting with Bell companies for the years 1907 to 1934, inclusive. This table shows a continuously increasing number of independent stations connected with the Bell System beginning in 1899. It will be observed that by 1934 there were only 74,152 independent stations in the United States that were nonconnecting with the Bell System, whereas in 1907 there were nearly 2,280,000 such stations.

On April 8, 1908, the manufacturing contract of February 6, 1882, between the American Bell Telephone Co. and the Western Electric Co. was amended so as to permit Western to sell telephone equipment to telephone companies that were not licensees of the Bell System, subject to certain restrictions. Several factors contributed to this change in Bell System policy. Thomas D. Lockwood, patent attorney for the American Co., in a memorandum to Theodore N. Vail, president of the American Co., dated August 8, 1907, outlined the patent situation as it affected the Bell System and concluded that except for the Pupin loading coil applicable to long lines, the Bell System had no exclusive patent protection which would preclude independents from developing satisfactory central office, substation, and outside plant equipment. Also, the sale by Western of telephone apparatus and equipment to independents would accomplish several desirable objectives. It would permit Western to share in the business offered by the independent telephone companies. It would permit Western to compete with the independent manufacturers and perhaps eventually drive them out of business. Further, the installation of Bell System equipment by independents would facilitate their connection with Bell System lines due to uniformity of equipment and would make such independents a more attractive buy in the event of their ultimate purchase by and consolidation with the Bell System.

TABLE 34.—*Plant expansion in the Bell System, by years, for the period 1885-1912, inclusive*

Year	Total telephone plant	Increase	Percent increase
1885.....	\$38,618,600		
1886.....	38,325,431	¹ \$293,169	¹ 0.759
1887.....	40,799,143	2,473,712	6.454
1888.....	44,436,342	3,637,199	8.915
1889.....	51,572,129	7,135,787	16.058
1890.....	58,512,400	6,940,271	13.457
1891.....	62,190,195	3,677,795	6.285
1892.....	67,635,701	5,445,506	8.756
1893.....	73,136,242	5,500,541	8.133
1894.....	77,731,161	4,594,919	6.283
1895.....	87,858,500	10,127,339	13.021
1896.....	95,241,646	7,383,146	8.403
1897.....	104,487,524	9,245,878	9.708
1898.....	118,123,841	13,636,317	13.051
1899.....	145,511,290	27,387,449	23.185
1900.....	180,699,800	35,188,510	14.183
1901.....	211,780,200	31,080,400	17.200
1902.....	250,013,200	38,233,000	18.053
1903.....	284,567,800	34,554,600	13.815
1904.....	316,520,600	31,952,800	11.229
1905.....	368,065,300	51,544,700	16.285
1906.....	450,061,400	81,996,100	22.278
1907.....	502,987,900	52,926,500	10.522
1908.....	528,717,000	25,729,100	5.115
1909.....	557,417,146	28,700,146	5.428
1910.....	610,999,964	53,582,818	9.613
1911.....	666,660,702	55,660,738	9.110
1912.....	742,287,631	75,626,929	11.344

¹ Decrease.

Source: Exhibit 1360-A, tables 16 and 27, pp. 73 and 102.

The Bell System systematically attempted to break up the formation of independent interconnected systems by purchasing any independent properties that could be obtained reasonably. The executives of the Bell System considered the existence of an independent interest in the telephone business, whether localized or interconnected, as inconsistent with the ideals of a universal and interdependent system of telephone communication. Many important independent properties were acquired by the Bell System after 1907. Most of the important acquisitions were subsequent to 1912.

Another method adopted by the Bell System after 1907 to eliminate competition was the use of its financial backers and their influence to prevent the financing of large independent units.²⁵ Such methods were used, for example, to prevent the financing of a long-distance line between Kansas City, Chicago, and New York and the development of an independent company in the State of Wisconsin. This method was made effective by bringing financial pressure to bear through the Baker-Morgan group, the financial backers of the Bell System, upon other financial organizations and institutions to which appeals were made by various independent organizations for adequate financing. The result was that large sources of investment capital in this country were made unavailable to independents. The larger the independents became the more impossible it was for them to obtain capital in the large amounts required. This slow financial strangulation of attempts to develop large competing independent systems was an important factor in regaining for the Bell System its former position of monopoly in the telephone field.

The effects of the change in policy of the Bell System in 1907, is demonstrated by the disproportionate increase in telephone stations owned by the independents as compared with stations owned by the Bell System. In 1907, the independents owned 2,986,515 stations, as compared to 3,642,565 owned in 1912, an increase of approximately 22 percent.²⁶ In 1907 the Bell System owned 3,132,063 stations, as compared to 5,087,027 in 1912, an increase of approximately 62 percent.²⁷

Antitrust Law Enforcement (1913-21).²⁸

The independent telephone interests resisted vigorously the acquisition policies of the Bell System, claiming violation of the antitrust laws. Complaint was made to the United States Department of Justice. After a series of conferences and communications, the Attorney General expressed an opinion on January 3, 1913, to the effect that certain proposed acquisitions by the American Co., if consummated, would be in violation of the Sherman antitrust law. Following the expression of the above opinion by the Attorney General. Mr. M. C. Kingsbury, vice president of the American Co., addressed a letter to the Attorney General under date of December 19, 1913, which outlined the proposed future policy of the Bell System with respect to the acquisition of independents. This letter has since been referred to as "The Kingsbury Commitment." Substantially, the Bell System agreed not to acquire, directly or indirectly, control over any competing company. It agreed to connect its system with other telephone systems for toll-service purposes provided the independent

²⁵ This policy had its inception in 1902, when the Baker-Morgan group first entered Bell System financial affairs. See exhibit 2006-F, pp. 160-190.

²⁶ See table 31, p. 128.

²⁷ *Ibid.*

²⁸ For complete development of this period see exhibit 2006-D, pp. 14-46.

company supplied standard trunk lines between its exchanges and the toll board of the nearest exchange of the Bell operating companies. It also agreed to, and did, dispose of its interest in the Western Union Telegraph Co., which it had acquired a short time previously.²⁹ The Kingsbury Commitment did not prevent acquisition of noncompeting telephone companies by the Bell System, but was generally understood to prevent acquisition of competing telephone companies until after January 1918, when it became generally understood that it was not a violation of The Kingsbury Commitment for the Bell System to acquire competing telephone stations, if at the same time the Bell System sold an equal or comparable number of Bell-owned stations to an independent. A typical transaction under this modification is the acquisition by Bell of the Federal Telephone & Telegraph Co. of Buffalo, N. Y., and the sale of the New York Telephone Co. stations in Jamestown and Rochester to the independent companies operating at these latter points. It appears, and it has been judicially determined, that the Bell Co., instead of selling its stations in Rochester to an independent, actually had and retained control of the company which purchased the New York Telephone Co. stations.³⁰ Table 35 below, which consists entirely of data supplied by the American Telephone & Telegraph Co., indicates the total number of stations purchased and sold by the Bell System during the period 1912-34, inclusive. It shows a total of 580,756 stations were purchased from, and 277,378 stations sold to, independents by the Bell System during the period when The Kingsbury Commitment was effective, 1914-21, inclusive, resulting in a net gain by purchase of 303,378 stations.

TABLE 35.—Stations purchased and sold by Bell System during the period 1912 to 1934, inclusive

Year	Number of stations purchased	Number of stations sold	Year	Number of stations purchased	Number of stations sold
(a)	(b)	(c)	(a)	(b)	(c)
1912.....	135,924	42,645	1925.....	137,482	45,540
1913.....	19,187	16,617	1926.....	15,909	11,419
1914.....	23,327	1,729	1927.....	207,640	4,976
1915.....	34,428	15,188	1928.....	45,022	1,953
1916.....	31,290	15,849	1929.....	64,234	12,120
1917.....	131,853	10,333	1930.....	153,959	9,847
1918.....	104,497	111,757	1931.....	15,784	348
1919.....	56,939	70,225	1932.....	67,062	35
1920.....	41,085	8,337	1933.....	1,741	57
1921.....	157,337	43,960	1934.....	2,695	116
1922.....	26,341	7,747	Total.....	1,696,977	443,357
1923.....	124,611	3,386			
1924.....	98,730	9,173			

Source: Statement prepared by American Telephone & Telegraph Co. and exhibit 2066-D, table V, p. 42.

NOTE.—The foregoing data include (1) for the years 1912 and 1913, purchases and sales of stations (presumably company stations) in connection with purchases of and sales of physical property; (2) for the years 1914 to 1927, inclusive, purchases and sales of company (for 1921, company and service) stations in connection with purchases and sales of "going or completed plant;" (3) for the year 1928, purchases and sales of company stations in connection with the purchase or sale of plant involving in any one transaction a consideration of \$10,000 or more and each purchase or sale involving an entire company or exchange regardless of amount involved; (4) for the years 1929 to 1934, inclusive, purchases and sales of company stations in connection with the purchase or sale of the entire property of a company, or where an entire exchange is involved, or where telephone plant is purchased or sold involving a consideration exceeding \$10,000 and the business handled over such plant is transferred by the selling company to the purchasing company. The foregoing data do not include (1) purchases and sales between Bell System companies; (2) purchases and sales by Bell-controlled companies from or to companies other than Bell associated companies; (3) corrections of reports of previous years and transactions reported in year following that in which consummated.

²⁹ The Western Union incident is discussed in chapter 4.

³⁰ *Rochester Telephone Corporation*, 2 F. C. C. 476, and *Rochester Telephone Corporation v. U. S. et al.*, decided June 20, 1938 by the U. S. District Court for the Western District of New York.

In effecting these purchases through consolidations and mergers, the American Co. conformed to the procedure earlier agreed upon to inform the Department of Justice and the Interstate Commerce Commission of such proposals and secure their permission in making such consolidations. During the period of Government control, August 1, 1918, to July 31, 1919, all the telephone companies in the United States were operated under the control of the Postmaster General. They were subject to the direction of the operating board of the United States Telegraph and Telephone Administration and its subordinate personnel.³¹ The Postmaster General, in a statement of policy, indicated that the Government operation and control of the telephone systems of the country would cause the coordination and consolidation of competing systems wherever possible; that such proposed consolidations would be submitted to the Post Office Department for approval. A committee was appointed to handle matters relating to consolidation.

Bell System-Independent Relations (1919-36).

Bell System-independent relations during the period 1919-36 have been characterized by a continuation of the Bell System's vigorous policy of acquisition, the development of a policy of cooperation with the independents, bitter disputes over division of toll revenues on interchanged business, and the restrictive contracts made between the Western Electric Co. and the major independent suppliers of telephone apparatus and equipment. By the end of 1936 the Bell System's control of the desirable telephone-exchange territory in the United States was substantially complete. The integrated structure of the long lines department, the Bell System operating companies, and the connecting independent operating companies furnished an efficient and uniform interconnected Nation-wide telephone service. Its manufacturing department, the Western Electric Co., enjoyed almost complete control in the field of telephone manufacturing. Bell System-independent relations during this period will be discussed, first, in relation to operating companies, and second, in relation to manufacturing companies.

Bell System Relations with Independent Operating Companies.—Three phases of Bell System relations with independent operating companies during this period are of importance, namely, the Bell System's policy of acquisition, its cooperative attitude toward independents, and disputes regarding the division of toll revenues on interchanged business.

(1) *Acquisitions.*—The situation created by The Kingsbury Commitment and the antitrust activities of the Department of Justice had proved unsatisfactory to many independents. The Bell System offered the best market for independents desiring to dispose of their holdings. By 1921 the policies of the Bell System toward independents, pursued over a period of years, had made the development of a unified Nation-wide independent system, capable of competing with the Bell System, impossible. Many owners of independent systems became dissatisfied and desired to sell. The policies expressed in The Kingsbury Commitment and in the antitrust activities of the Government prevented a sale to the Bell System, which was

³¹ A full discussion of the period of Government control is set out in exhibit 2096-D, pp. 41-46, and exhibit 2096-B, pp. 82-102.

potentially capable of paying the best price. Even under the modified procedure which became effective in 1917, whereby the Bell System was permitted to acquire competing independent companies on the basis of the sale of an equal number of Bell-owned stations, conditions were unsatisfactory to many independents desiring to dispose of their properties to the Bell System. Through the combined efforts of the Bell System, the independents, and certain State authorities, the Willis-Graham Act of 1921,³² amending the Transportation Act of 1920, was passed, which provided that competitive telephone companies wishing to consolidate could avoid the possibility of prosecution under the antitrust laws by securing the approval for the consolidation from the appropriate State authorities and the Interstate Commerce Commission.

Immediately upon the passage of the Willis-Graham Act, the Bell System proceeded with the consolidation of the Ohio Bell Telephone Co. and the Ohio State Telephone Co., which had been operated in competition in many localities. The Attorney General, in answer to a letter from the American Co. inquiring as to that Department's attitude with respect to the restrictions contained in the so-called Kingsbury Commitment, informed the American Co. that they might consider that commitment as terminated.

The Bell System began active acquisition of independents immediately upon the passage of the Willis-Graham Act. In 1921, the year of its passage, 157,337 stations were purchased from, and 43,960 stations were sold to, independents by the Bell System. Activity in this respect on the part of the Bell System created apprehension among the independents. After some negotiation between the American Co. and the independents, the former company sent a communication to F. B. McKinnon, president of the United States Independent Telephone Association, which has since come to be known as the "Hall Memorandum," dated June 14, 1922,³³ stating the Bell System's position relative to acquisitions. Briefly, the Bell System agreed to make no purchases of, or consolidations with, independents unless demanded for the convenience of the public or unless special reasons existed making the transaction desirable for the protection of the general public service or Bell System property. Under the guise of these two exceptions, the Bell System, since 1922, has acquired many independent telephone properties. The American Co.'s construction of the Hall Memorandum was such that there were very few instances where a purchase of an independent would be repugnant to the terms of the memorandum. The succeeding history of acquisitions indicated that the Bell System has consistently followed this policy, keeping in mind always the desirability of maintaining friendly relations with independents and with the United States Independent Telephone Association. During 1922 to 1934, inclusive, the Bell System acquired by purchase 961,110 stations from, and sold 106,717 stations to, independents, a net gain of 854,393 stations.³⁴ In addition to these acquisitions there was a considerable number of stations, the control of which was acquired by the purchase of stock or other means. In 1924, a systematic procedure in obtaining data on desirable independent properties was instituted. In that year and again in 1927, vice presidents of the American Co. requested the associated companies to furnish lists of independent companies

³² 42 Stat. 27, C. 20.

³³ For detailed discussion see exhibit 2096-D, pp. 80-89.

³⁴ See table 35, p. 140.

which they considered desirable additions to the Bell System. In response, the associated companies reported 1,056 companies owning 1,718,413 stations as desirable additions to the system. By the end of 1934, 411,638 stations relating to 470 of the reported companies had been acquired.³⁵

The vigorous opposition of the independent telephone companies and the United States Independent Telephone Association to the Bell System's acquisition policy under the latter's interpretation of the Hall Memorandum, availed them nothing. They insisted that Bell System sales to independents must equal Bell System purchases in order that a strong system of independents might remain. The Bell System refused to accede to such demands.

(2) *Division of toll revenues on interchanged business.*³⁶—Although the Bell System controls approximately 82 percent of the telephones in the United States, as well as 98 percent of the toll wire mileage, it operates only some 6,700 of the approximately 20,000 exchanges in the country. Toll messages originated by or destined for subscribers at approximately 13,300 exchanges, may, and generally do, make use of the services and facilities of both Bell and independent companies. A certain amount of the toll traffic of these exchanges is handled wholly over independent facilities, but the discussion here is limited to the traffic interchanged between the two groups.

The history of the division of toll revenues on interchanged business has been one of frequent protest by various independents with respect to the amount permitted them by Bell System companies. The division of such revenues has been characterized by the consistent lack of uniformity in the basis for the amounts paid as between various independent companies and Bell System companies. Bell System studies during the past years show that there is apparently no relation between the cost to connecting companies of originating and terminating interchanged business, and the compensation received therefor. The provisions of the typical Bell System connecting company contract relating to compensation for originating and terminating toll business appear to be prescribed by the Bell System rather than to be the result of arms-length bargaining between the contracting parties; this result is probably inevitable in view of the Bell System's superior bargaining position resulting from the necessity of the independents to connect with the Bell in order to supply their patrons with a comprehensive Nation-wide service. The Bell System standard connecting company contracts provide specifically that the compensation to the connecting companies is not intended to cover compensation for the use of facilities provided and services rendered between the subscribers' stations and the toll switchboards. It is stated in the contracts that compensation for the above-mentioned services and the use of facilities is covered by exchange rates.

Provisions of the typical Bell System connecting company contracts relating to interchanged business are drawn up by the Bell System. They define largely the traffic to be interchanged and determine, among other things, the point or points on the system of the connecting company at which business may be originated for Bell System points; the point or points at which the two systems shall be connected; the route or routes to be followed by the interchanged business, including the specification of the point or points of connection at which the delivery of messages to and from each system is to take place; the method

³⁵ See exhibit 2096-D, pp. 55-61.

³⁶ See exhibit 2096-D, pp. 111-122, and appendix 8.

of operation on messages originated at the connecting company system; and the method of division of revenues on the commission schedules applicable thereto. In addition to these matters, the contracts establish a number of mutual obligations, most of which are designed apparently to establish a substantial degree of Bell control over both the operations and methods of the connecting companies. They contain clauses limiting extension of service to other companies; require uniformity of operating methods and routings; provide that the toll rates between Bell points and connecting company points must be computed on the same basis as the inter-Bell rates; and require that each company must construct, equip, maintain, and operate its system in such manner that good telephone service shall be furnished to the public at all times, and provide adequate toll and exchange facilities therefor.

(3) *Bell System cooperation with independents.*—In an address to the annual convention of the United States Independent Telephone Association, in 1922, Vice President Hall of the American Telephone & Telegraph Co., laid the foundation for cooperation between the Bell System and the independents with respect to uniformity of rate procedures and comparisons and for collaboration between the Bell System and independents in appearances before legislative bodies for the mutual benefit of both parties. The execution of this policy, it was believed, would improve public relations of the telephone industry generally and make it easier for both groups to prevent unfavorable legislation and unfavorable rate adjustments.

Bell System relations with independent manufacturing companies.—Since 1919, Bell System relations with independent manufacturers of telephone apparatus and equipment have been characterized by an attitude of sufferance on the part of the former. This policy was epitomized by E. V. Cox, assistant vice president of the American Co., in testimony given in the *Baltimore rate case* when he said: ³⁷

* * * The Western Electric Co., by virtue of its Bell System relations and volume, is in a position to undersell any independent telephone manufacturing company in the country. It could put them out of business if that was considered to be the ethical thing to do. * * *

TABLE 36.—*Net sales of major independent telephone equipment manufacturers to the Western Electric Co.,¹ 1926-34, inclusive*

Year	Total net sales of 6 major independents ²	Net sales of major independents ² to Western Electric	
		Amount	Percent of total
1926	\$27, 170, 344	\$11, 563, 635	42. 55
1927	21, 274, 960	7, 726, 472	36. 31
1928	20, 008, 979	6, 193, 316	30. 95
1929	24, 250, 506	9, 152, 061	37. 73
1930	24, 170, 259	10, 086, 057	41. 72
1931	13, 791, 043	4, 119, 193	28. 86
1932	7, 967, 761	4, 518, 931	56. 71
1933	6, 041, 540	2, 947, 057	48. 77
1934	7, 582, 760	2, 813, 708	37. 10
Total	152, 258, 152	59, 120, 430	38. 82

¹ Figures supplied by various companies. See exhibit 292, table II, p. 9.

² Automatic, Kellogg, Stromberg, North, Leich, and Reliable.

NOTE.—Stromberg's sales include telephone equipment sales only. Figures of the other companies are total sales inasmuch as their respective percent of nontelephone business is quite small.

³⁷ *West v. Chesapeake & Potomac Telephone Co.*, 295 U. S. 662, Transcript of Record, Vol. 1, p. 181.

TABLE 37.—Comparison of total average annual sales of Western Electric Co. with those of principal independent manufacturers of telephone apparatus and equipment¹, 1926-34, inclusive.

Company	Amount ²	Percent of total
Western Electric Co.....	\$231, 701, 389	91. 6
Independent manufacturers:		
Automatic Electric Co.....	8, 637, 898	3. 4
Stromberg-Carlson Telephone Manufacturing Co.....	6, 614, 113	2. 6
Kellogg Switchboard & Supply Co.....	4, 471, 670	1. 8
Reliable Electric Co.....	566, 728	. 2
North Electric Manufacturing Co.....	443, 536	. 2
Cook Electric Co.....	429, 462	. 2
Leich Electric Co.....	177, 920	. 1
Total, independent manufacturers.....	21, 341, 327	8. 4
Grand total.....	253, 042, 716	100. 0

¹ Figures supplied by the various companies. See exhibit 292, table I, p. 7.

² Includes sales of telephonic and nontelephonic apparatus, equipment and supplies, and resales of purchased equipment and materials.

By a series of contracts, beginning in 1919, the Western Electric Co. has assumed a dominating position in the business of the major independent suppliers. The independent suppliers secure a large portion of their business from orders placed with them by the Western Electric Co. During the 9-year period 1926 to 1934, inclusive, 38.82 percent of the net sales of six major independent suppliers³⁸ constituted sales to Western. This information is set out in table 36 on page 144. Without this business from Western, some of the independent suppliers would probably be unable to survive, because of Western's position as the manufacturer and supplier of the Bell System, which owns approximately 90 percent of the total book value of telephone plant and equipment and 80 percent of the total telephone stations in the United States. The relative importance of the principal independent manufacturers of telephone apparatus and equipment is reflected in table 37, which presents a comparison of their total average annual sales for the 9 years 1926 to 1934, inclusive, with the total average annual sales of Western for the same period.

In view of the fact that a large proportion of the total sales of these independent manufacturing companies is represented by sales to Western Electric Co., and the extent to which they may be dependent on these sales for their continuance in business, they cannot be considered as offering any material competition to the Western Electric Co. in the telephone equipment manufacturing field.

Summary.

From the preceding pages of this chapter, it is evident that the Bell System has developed a Nation-wide, unified system to monopolize the telephone part of the national communication field. Its watchword has been "One system, one policy, universal service." This policy has been reflected in the Bell System's development of telephone service both in local exchanges and in the long distance field. It dominates the manufacture of telephone apparatus, equipment, and cable in the United States. It has dominated the development of the telephone art. The furnishing of telephone service has always been considered by the Bell System as a natural monopoly

³⁸ Automatic, Kellogg, Stromberg, North, Leich, and Reliable.

and it has deemed competition to be harmful from the viewpoint of both the subscriber and the stockholder, harmful to the subscriber because of the expense incident to duplicate facilities and harmful to the stockholder because of the threat to profits. The Bell System has achieved its dominant position in the telephone communication field through the prevention and elimination of effective competition. At the present time the independent telephone companies, including operating and manufacturing companies, supply a relatively small proportion of the Nation's telephone service requirements. With few exceptions the independent operating companies are in the smaller towns and communities. In 1934, there were 16,968,845 telephone stations in the United States, of which 13,457,888 were owned by the Bell System and 3,510,957 were owned by companies outside the Bell System. From the standpoint of revenues the Bell System stations are, of course, much more productive than the stations of the independents on the average. In the manufacturing field the Western Electric Co. sells approximately 90 percent of all telephone apparatus, equipment, and cable sold in the United States.

Since the amendment of the Interstate Commerce Commission Act by what has been called the "Willis-Graham Act" in 1921, there has been increasing cooperation between the Bell System and the independents. This changing attitude is undoubtedly occasioned by many considerations among which may be the desire of the Bell System for the aid of the independents for lobbying activities before legislative bodies and to lessen the pressure of independents for higher commissions on interchanged business. The independent manufacturers sell substantial amounts of equipment to the Western Electric Co. for use by the Associated Bell Companies and this relationship results in a certain measure of dependence of such independent manufacturers on the policies and practices of the Bell System.

CHAPTER 6

THE LICENSE SERVICE CONTRACT

In chapter 1, section 2, of this report brief mention is made of the license contract relations between the parent and the operating companies of the Bell System. This chapter contains a brief description of the license contract, its history, the claims advanced by the American Co. in support of the license fee, an analysis of these claims, and of the significance of the contract.

Purpose and Functions of the License Contract.

The statement of the license contract now in effect between the American Co. and the 21 licensee companies¹ operating in the United States² purports to cover "services, licenses, and privileges."³ It was executed in 1930 and 1931 by all those companies⁴ except the Pacific Telephone & Telegraph Co., which company finally executed in March 1936 a memorandum agreement practically embodying the existing standard form of license contract.⁵ The current statement of the license contract is in standard form, although there are variations in the territorial provisions for each licensee.

The contract licenses the licensee company to use within its territory all telephones and telephonic devices, apparatus, methods and systems needed for its business which are covered by patents now or hereafter owned or controlled by the licensor, or which it may have

¹ The long lines department is only a department of the American Co., rather than a separate corporation and thus cannot legally have a contract with that company. There is an understanding, however, between the general department and the long lines that the latter is to receive "services of the same general character as those received by Bell System licensee companies," and from 1915 to 1936, the long lines was billed by the general department for the same percentage of gross revenues as was collected from the licensee companies under their contracts. In 1936 there was initiated the practice of billing long lines for a portion of the general department's expenses, excluding taxes and so-called financial costs, which represented its alleged cost of performing the work for the long lines. See p. 166, footnote 86.

² The American Co. also has license and service agreements with the Bell Telephone Co. of Canada, Ltd., and Transpacific Communication Co., Ltd., See exhibit 130, p. 105-109. The Canadian Co.'s existing contract, executed May 16, 1923, differs in some respects from that of the associated companies, notably with respect to the patent and financial provisions. This company pays only a 1-percent fee. The Transpacific Co. (dissolved in 1936) under its agreement with the American Co., dated October 27, 1932, was entitled to services from the long lines department, such as engineering its plant, for which it was to reimburse the American Co. at cost. In addition, the Transpacific Co. was also to have available to it the "services, licenses and privileges" allegedly furnished by the American Co.'s general department under the license contract with the associated companies, and to pay therefor on the same basis as those licensees.

³ The Cuban-American Telephone & Telegraph Co. has no service contract with the American Co.

⁴ See testimony of W. S. Gifford, president of the American Co., Transcript of Record, Federal Communications Commission, Special Investigation, Docket 1, p. 946. A specimen copy of the current contract will be found in appendix 7.

⁵ See exhibit 130, pp. 97-99.

⁶ The license arrangements with the Pacific Co. were, until March 10, 1936, embodied in that company's original license of May 7, 1880, as subsequently modified by letters, etc. See exhibit 130, at pp. 10-12, 92-93. It appears however, that a tacit understanding existed between the American Co. and the Pacific Co., as the result of which the latter operated under the same license arrangements in fact as did the other operating companies. See exhibit 1950-A, pp. 256-257. On March 10, 1936, however, the American Co. and the Pacific Co. executed a memorandum which, according to the preliminary recital, stated "the existing license and service contract relations" between the two parties. That recital also contained the declaration that "The necessity for this memorandum arises out of the making of the registration statement to be filed with the Securities and Exchange Commission by the Pacific Co. in connection with its proposed present refinancing, and the purpose of this memorandum is to state in convenient form the existing rights and obligations of the respective companies under the contract dated May 7, 1880, between the National Bell Telephone Co. and the Pacific Bell Telephone Co. (to which the American Co. and the Pacific Co. have succeeded as parties), as modified from time to time by written or oral agreements and by the practice of the parties." The memorandum then sets forth a description of the contractual relations which, except for the few references to the transcontinental lines in the Pacific Co.'s territory, is substantially in the standard form in effect for the other licensees.

the right to authorize the associated companies of the Bell System to use. The licensee is prohibited from disposing of such telephones, telephonic devices, etc., without the consent of the licensor, except to those properly licensed by the licensor. The licensee is to be protected by the licensor from infringement actions arising from the use of any telephones, or telephonic devices, etc., which the licensor may recommend. The licensor is to maintain arrangements whereby telephones and other telephonic devices and apparatus needed for the business of the licensee may be manufactured under the patents owned or controlled by the licensor, or under which it may have the right to grant licenses to others, and made available to the licensees, "at prices which shall be reasonable and not higher than the lowest prices charged by the manufacturer from time to time to others under similar circumstances."

The licensor agrees: (1) to prosecute continuously fundamental work of research in the development of telephony and of plans, etc., designed to improve telephone service and to promote safety, economy, and efficiency in the equipment, construction, and operation of the telephone plants of the associated companies of the Bell System, and to render available to the licensee the results of such work, acquiring or securing the use of patents held by others if this be necessary; (2) to furnish to the licensee (a) advice and assistance in general engineering, plant, traffic, operating, commercial, accounting, patent, legal, administrative, and other matters pertaining to the efficient, economical, and successful conduct of the licensee's business, (b) advice and assistance in financial matters, and (c) assistance and cooperation in connection with employees' well-being. The licensee is given the right to extend to connecting companies within its territory, on such terms and conditions as it may determine, the benefits of such engineering and other technical advice and information as it may receive from the licensor.

The licensor agrees further to maintain such an organization of trained specialists as will enable the above-outlined work "to be so done as to relieve the licensee from the necessity of attempting to perform said work for itself."

The remaining provisions relate mainly to extraterritorial or toll connections.⁶ The American Co. agrees that it will maintain connections between the licensee's telephone system and the systems of other associated companies of the Bell System and between places in the territory of the licensee which the latter is not authorized to connect; and that the licensee may extend to its customers, and its connecting companies within its territory, the privilege of using these connections, upon payment of the regular tolls therefor. There are also stipulations with respect to the manner in which connections for toll communications are to be made, and the compensation the licensee is to receive for calls originating at the licensee's exchanges and for calls originating elsewhere.

Although the contract states that the charge to the licensee, "in consideration of the premises and for all benefits accruing to the licensee hereunder," is 2½ percent of gross telephone earnings, the actual rate of payment since January 1, 1929, has been 1½ percent, subject to the right of the American Co. to increase the fee to the stated 2½ percent upon 4 months' notice.

⁶ See exhibit 1361, pp. 9-10.

History of the License Contract.⁷

The license contract was originally an agreement between the Bell parent organization and certain licensees which provided for the leasing of telephones and licensing their use, hence the name. Until 1927 the parent company deemed it wise to retain ownership of the telephone instruments, and exploit them through rental arrangements with the various licensees.⁸ The retention of title to the instruments was made possible originally by the fact that the licensor held the Bell patents on those instruments, and, after the expiration in 1893 and 1894 of the original patents, by the licensor's stock control of most of the licensees.

Possession of title to the instruments permitted the licensor more easily to guard against patent infringements, and to provide for the maintenance of the instruments in a satisfactory operating condition. In addition, retention of title afforded the licensor company a continuous income in the form of rental payments. Prior to the expiration of the original Bell patents on the instruments in 1893 and 1894, their ownership enabled the licensor to dictate the rates to be charged the telephone patrons by the licensees, and to prescribe the character of the service and the territory to be developed by the licensees.

Temporary licenses (1877-81).—The early Bell patent holders were uncertain as to the future course of the telephone industry. They took advantage of their patent position not only to retain the ownership of the telephone instruments, but also to impose many restrictions upon the licensees. The first licenses issued by those controlling the Bell patents were, in effect, agency agreements, whereby certain individuals or companies were given the right to rent the telephones, within assigned areas, at prices to be fixed by the Bell licensor company. The agents were to collect the rentals and royalties from the users, and transmit the collections, less a specified discount to cover their services, to the parent Bell company. The licensor not only limited these licenses to short terms, usually 5 years, but also reserved the option to purchase, at the expiration of the terms fixed, and at a reasonable price but not in excess of actual cost, the property used by the licensees in their telephone business.

First permanent licenses.—The uncertainties of the position of the licensees caused by the restricted duration of their tenure and the threat of the option of purchase rendered them unwilling to furnish

⁷ A considerably detailed history of the license contract will be found in exhibit 130. A brief review of the license contract history of each associated telephone company is contained in the discussion concerning each company in exhibit 1362, vols. A-E; see e. g. exhibit 1362-B, pp. 209-216, New England Telephone & Telegraph Co. Testimony relative to the history of the licensing arrangements will be found in Transcript of Record, F. C. C., Special Investigation, Docket 1, vols. 9-12. The witnesses from the American Co. were President W. S. Gifford, Comptroller Helss, Assistant Comptroller Crunden, General Auditor J. W. Green, and J. H. Ray, of the legal department.

⁸ Until 1902, the license contract provided that the licensee was to charge its subscribers such rental and royalty for the telephones as the licensor prescribed. In return for telephone instruments supplied to it, the licensee was to pay to the licensor a certain percentage of the telephone rental and royalty so fixed, retaining the balance as its compensation. As of January 1, 1902, the licensor introduced a change in the basis of payment by the licensees, shifting from the number of telephone instruments furnished to the operating companies to 4½ percent of the gross earnings of those companies. The license fee remained at 4½ percent of gross earnings until January 1, 1926, although, as of January 1, 1913, there was a modification in the method of calculation of the fee, avowedly made in order to conform it to the new accounting system established by the Interstate Commerce Commission. In 1926, the fee was reduced to 4 percent, the reduction to be effective as of January 1, 1926, for a period of 1 year, and thereafter until discontinued upon notice by the American Co. of not less than 4 months. The next reduction in the fee, to 2 percent, occurred in December 1927 in connection with the sale of the telephone instruments to the licensees and the concomitant termination of the rental arrangements; the effective date of this reduction being January 1, 1928. The American Co., however, still expressly reserved the right to withdraw the reduction made in 1926, upon not less than 4 months' notice. The last change in the fee, announced in December 1928, reduced it by another one-half of 1 percent, as of January 1, 1929, although again, the licensor retained the right to withdraw this reduction upon 4 months' notice. Consequently, the present fee is 1½ percent of gross telephone revenues, although the American Co. possesses the right to raise the fee to 2½ percent, the amount stated in the license contract, upon 4 months' notice.

adequate capital for the operation and development of their business. The same factors made it difficult, if not impossible, for them to secure capital elsewhere. Consequently, the parent Bell company, the licensor, decided to and did grant perpetual licenses to replace the existing temporary licenses.

Although the necessities of the situation compelled the granting of permanence, the licensor still sought to maintain some interest in, and control of, the telephone business of its licensees. The possession of the basic patents together with the option of purchase enabled the licensor so to condition its concession as generally to secure the desired interest and control.⁹ Most important of the demands of the licensor was that for a certain percentage, varying from 30 to 50 percent, and usually 35 percent, of the capital stock of the licensees. This so-called franchise stock formed a substantial nucleus for the acquisitions of stock vesting control of the associated companies in the licensor company. Other stipulations imposed by the latter company as part of the transaction whereby the perpetual licenses were conferred were a prohibition against the borrowing of money by the licensees without the licensor's consent, that the licensor was to be represented on the licensee's board of directors or executive committee, or both, the requirement that licensees were to report as to their operations pursuant to the request of the licensor, etc.

The permanent licenses executed in the period from 1881 to 1918 usually were in a standard printed form for all the licensees, with such additions or modifications as were necessary to fit the contract to the situation of any particular licensee. The chief matters covered by the terms of these contracts were (1) the furnishing of the telephone instruments and apparatus for exchange, private lines, and extra-territorial connecting-line business, and (2) the making of extra-territorial or toll connections. The licensor was to fix the rental and royalty to be charged by the licensee to its customers. The licensee was to pay the licensor, as rental and royalty for the instruments furnished to it, a stipulated percentage of the rental and royalty fixed for the customers.

In the period in question, the matter of the performance of work for the licensees by the parent Bell company was not expressly mentioned in any formal contract between the licensor and licensees,¹⁰ with the possible exception of a memorandum agreement executed in 1907, by American Bell Telephone Co. and Southwestern Telegraph & Telephone Co., a New York corporation operating in Texas. In that memorandum, two somewhat cryptic allusions were made to the fact that American Bell had been, and was to continue, furnishing other services and things.

The "Restatement" of 1918.—Despite the absence from the license contracts of formal provisions requiring such activity, the licensor company, at an early date, began performing some work in telephone engineering and research, as well as concerning itself with other aspects of the operations of the licensees, such as accounting, financing, etc. In the telephone rate controversies which began about 1908, the license contract payment, then 4½ percent of gross revenues, was challenged. The defense of the local telephone company was directed

⁹ See exhibit 1362-A, pp. 5-9.

¹⁰ Some of the contracts did include an agreement by the licensor company to handle at its own expense all cases of patent infringements relating to the Bell patents. See exhibit 130, pp. 32-33.

not only to the value of the telephone instruments rented, but consisted also of a description of the various kinds of work being done by the licensor and of the alleged benefits to the licensee therefrom. This showing was accompanied by the assertion that these services were part of the consideration for which the license contract fee was paid. This state of affairs, wherein the obligation of the licensees to pay a certain fee was fixed, while there was no formal statement obligating the licensor to carry on the work it claimed to be part of the consideration for the fee, apparently became unsatisfactory so far as the relations of the licensor with both the public and its licensees were concerned. In any event beginning in 1914, there were attempts within the American Co. to secure the incorporation in the formal license contract of a statement of the services, which culminated in the redraft introduced by that company in 1918.

This restatement has been so called because it purported to be merely a redraft of then existing license-contract relations. Thus it contained a preliminary recital identifying the license contract under which the licensee was operating, which noted that that contract had been modified "in various respects as shown by letters, by written agreements, and by the practice of the parties evidenced by a continued course of dealings between them,"¹¹ and that the parties desired "for purposes of convenience to state in one instrument and reaffirm the contractual relations that now exist and have heretofore existed between them * * *." It differed principally from the draft of the license contract in general use before 1918 in that it included a summary of services to be performed by the licensor for the licensee.

The first revised license contract to be executed by a licensee was dated November 14, 1918, although in October 1918, in its arrangements with the Postmaster General for the wartime operations, the American Co. stipulated that it was to "continue to perform * * * the duties hitherto required of it under the license agreements * * *" and attached a copy of the proposed redraft for the Southern New England Co. as a specimen of such agreements.¹² The restatement was subsequently executed by all the other licensees except the Pacific Telephone & Telegraph Co.¹³

*Sale of the telephone instruments to the licensees.*¹⁴—Until December 31, 1927, the American Co. rented the telephone instruments to the licensees. Effective as of that date, the telephone instruments (receivers, transmitters, and induction coils) were sold to the licensees and the Western Electric Co.,¹⁵ and the license fee was reduced from 4 to 2 percent. The telephone instruments used by the long lines department of the American Co. were, as of the same date, transferred within the corporate records of the American Co. to the long lines department. The instruments were sold for a sum of \$14,395,800¹⁶ in excess of the American Co.'s investment (book cost less related depreciation reserve). This was the profit realized by the American Co. from the transaction. The profit to that company was approximately 60 percent of its net investment in the instruments.

¹¹ For an explanation of these 3 forms of modification, see exhibit 130, pp. 36-37.

¹² See exhibit 130, pp. 62-63; and exhibit 2096-B, pp. 21, 23-25.

¹³ See *supra*, at p. 147.

¹⁴ See exhibit 132, pp. 48-68; and testimony of President W. S. Gifford and Vice President A. W. Page, of the American Co., Transcript of Record, Federal Communications Commission Special Investigation Docket 1, pp. 1432-1572.

¹⁵ The great bulk of the instruments were sold to the licensee companies. They paid \$38,183,727 of the total amount of \$38,572,462 received by the American Co. for the instruments sold. See exhibit 132, p. 49.

The price charged the associated companies was calculated on the basis of the average price per unit paid to the Western Electric Co. for new instruments purchased during the 9-month period ended September 30, 1927, less a 20-percent deduction based upon estimated depreciation. The amount paid by the associated companies was \$38,183,727,¹⁶ which was almost 82 percent of the American Co.'s gross investment of \$46,583,315 in the instruments then charged to the licensees, and approximately 160 percent of the net investment of \$23,576,075 in these instruments.¹⁷

The fairness of the sale is questionable. First, determination of the sale price was arbitrary. Determination of the terms of the sale was wholly controlled by the American Co. and was in no sense to be construed as a bargain arrived at after a consideration of the respective interests of two persons with diverse interests. As stated heretofore, the sale price was based upon the average price per unit paid the Western Electric Co. for new instruments during the 9-month period ending September 30, 1927, less a deduction of 20 percent based upon estimated depreciation. There was no indication that all the instruments sold the licensees were either similar to, comparable with, or of equal value to the instruments purchased during the first 9 months of 1927. Secondly, the deduction of only 20 percent in the face of a depreciation reserve of 49.39 percent of gross book cost, which had been accrued against the instruments, resulted in the inclusion of an unwarranted increment in the amounts added to the fixed capital accounts of the associated companies, and insofar as this may be included in values fixed for rate-making purposes and in annual depreciation charges it imposes an unwarranted burden on the telephone subscribers. The licensees were forced to invest over \$38,000,000 in instruments which originally cost \$46,500,000 and which had accrued against them a depreciation reserve of \$23,000,000. If the Bell System had been treated as a single unit with individual corporate entities existing only for convenience in operation, the amount transferred to the licensees' books would have been only \$23,500,000 instead of \$38,000,000.

Not only were the associated companies burdened with the above-mentioned unwarranted increment in their fixed capital accounts, but they were also faced with the necessity for taking care of rapid obsolescence in the equipment purchased, which resulted from the introduction and standardization by the American Co. of the hand telephone set in 1926. The new instrument required a transmitter and receiver different from, and not interchangeable with, those required for the desk stand and wall equipment which was sold to the associated companies. Production of desk stand sets declined rapidly after 1926 and virtually ceased after 1930. The American Co. disclaims that its knowledge of the obsolescence of the existing instruments was a motive for their sale to the associated companies. They state that it was their reasonable belief in 1927 that continued telephone growth would insure the transferred instruments being used during their useful lives regardless of the hand set development. The company blames the depression with its large loss of telephones, for the rapid decline of desk set production after 1927, and its elimination after 1930. This

¹⁶ The amount of \$14,395,800 is not the exact profit from the sale of the instruments, due to the fact that there was an adjustment made in 1923 amounting to \$4,599. The adjusted profit is \$14,391,201. This same adjustment affects the selling price of \$38,183,727. See exhibit 1360-B, table 113, p. 498, item 8.

¹⁷ The net figure is derived by deducting the depreciation reserve of 49.39 percent which had been accrued on the instruments. See table 15, in exhibit 132, p. 49.

statement is not consistent with the fact that major replacements of desk set by hand set instruments occurred between 1930 and 1935, the period during which the drastic loss of stations referred to by the company took place. Had it not been for the obsolescence of the desk set type, stations regained following the depression could have been supplied by reuse of the desk stand type of instrument which the associated companies had on hand in abundance. It is difficult to see how loss of stations which were later regained had anything to do with supersession of the desk set type of instrument by the improved hand set type.

Redraft of license contract into current form.—After the sale of the telephone instruments in 1927, the rental provisions of the license contract became obsolete. Consequently, after some delay, the American Co. introduced a revised form of the contract in which the principal change was the deletion of the rental provisions. This contract, like the "redraft" of 1918, purported to be only a "restatement," there being a recital that in view of the fact that the instruments were to be purchased by the licensee rather than rented, it was desirable "to state and reaffirm in this instrument the license and service contract relations which continue in force between them" (between the licensor and licensee).

Sublicense arrangements.¹⁸

Under the terms of the license contract the licensee was authorized to sublicense other companies operating within the territory of the licensee, subject to the approval of the licensor. In general such sublicenses were granted by the licensee on substantially the same terms as those stipulated in the license contracts granted by the Bell licensor.

Since the licensee paid the licensor under the license contract on an instrument basis, no provision in the contract altered this charge for cases where the use of the instruments was sublicensed until 1902, when the 4½-percent payment was introduced. The license contract provisions relating to sublicenses merely required that the latter conform to the license contract of the licensee, and that the sublicensee be made expressly subject to the enforcement of all the rights and remedies prescribed by the license contracts in favor of the licensor. Thus, despite the pecuniary interest of the Bell Co. in the execution of sublicenses, because of the resulting increase in the use of its telephones, the proportion of the telephone rentals which the sublicensee

¹⁸ The sublicense represents one of the ways in which the influence of the American Co. has been extended into areas not directly served by its licensees. This arrangement enabled the conversion of possible competitors into interested participants in the operations of the Bell System. In this connection, the opinion of Judge Dever, in *Read v. Central Union Telephone Company*, in chancery, general No. 299689, term No. 3062, superior court of Cook County, Ill., January 20, 1917, pp. 34-35, should be noted: "Another means adopted by the Bell and American companies, to extend the influence of the Bell System in the telephone field was by the making of what was described in the hearing as sublicense contracts. Briefly, these were contracts made by the Bell subsidiary or associate companies with independent companies operating in the licensed territory of the respective Bell subsidiaries, under which contracts the sublicensee companies were given the right to use the Bell instrument and were permitted to make physical connections of their lines with the lines of the Bell companies; the sublicensees agreeing in these contracts to connect their lines exclusively with the lines of the 'Bell System' companies. In other cases the subsidiary Bell companies acquired the ownership of stock in independent companies; also in many cases the plants and property of independent companies were in various ways merged with the Bell companies' plants. In some instances the Bell subsidiary company would sell a portion of its plant to the independent company and at the same time would enter into a contract with such independent company, under the terms of which the latter would become a sublicensee. In another instance the subsidiary company would purchase outright the plant of an independent competing company and it would thereafter become an integral part of the Bell System." There is no doubt that in the early history of the Bell System much of its control of the telephone business of the country was acquired by reason of its ownership of the fundamental patents, but as time passed, its stock-controls and sublicense arrangements became more and more effective and the patent rights less important in securing and maintaining its dominant position in the telephone field."

secured depended upon how much of the discount given by the licensor the licensee would surrender.

In 1902 the offer proposing the change to a payment of 4½ percent of gross earnings in substitution for the rental upon telephone instruments stated a rule for situations where the licensee had an interest in the sublicensee company.¹⁹

If in any case you have acquired, or shall hereafter acquire, any interest in a sublicensee company * * * operating in your territory, a portion of the total gross earnings of such company proportionate to your said interest shall be treated as a part of your total gross earnings in lieu of a like proportion of your actual receipts from that company.

Under Comptroller Dubois' circular letter announcing the 1912 change in the computation of the license fee,²⁰ if the licensee owned a majority of the sublicensee's stock and the sublicensee were in effect operated as a part of the licensee's telephone system, the same proportion of the sublicensee's gross revenues was added to those of the licensee as the proportion of stock owned by the latter in the sublicensee. The letter noted that on application for the exclusion of such gross revenues of any subsidiary company, the question would be carefully considered and determined on the facts in each case. Section 11 of the "Restatement" of 1918 contained practically the same provision, except that the requirement as to the operation of the sublicensee as a part of the licensee's telephone system was omitted.

In 1925 the American Co. and the associated companies considered the advisability of extending the benefits and privileges of the license contract to the connecting companies of the Bell System, and a contract for such companies was drafted²¹ May 6, 1926. E. S. Bloom, then vice president of American Telephone & Telegraph Co., sent to the associated companies copies of this proposed contract and a circular letter which recited these facts, and then pointed out the relevant conditions:

It was the consensus of opinion that, for the present at least, the benefits and privileges of the license contract should not be extended to companies in which the associated company does not have a majority of the voting stock.

One of the stipulations made by the American Co. was that—

If and when this company offers the associated companies a reduction from the contract rate of 4½ percent for the payment, the same reduction under the same terms shall be offered the sublicensed company by your company.

In the existing license contract, the emphasis is upon the licensee's stock ownership in, and physical connections with, other companies, rather than upon the presence of a sublicense contract. Thus, in the determination of the total gross earnings of the licensee for the purpose of computing the license contract fee as prescribed in section 11 of the present contract, there is to be added to the licensee's gross earnings an amount, computed as in the case of the licensee, equal to the gross earnings:

¹⁹ See exhibit 130, pp. 44-45, and exhibit 132, appendix 5.

²⁰ See exhibit 130, p. 47.

²¹ This contract provided that the licensee was to furnish telephones to the connecting company, and that the latter was to have the right to use all patented telephones and telephone devices, etc., which the licensee could use; and that the sublicensee would be protected against all actions for alleged patent infringements. In addition, the licensee was to furnish advice and assistance in operating and engineering, financing, and in the adoption of measures for the maintenance of a contented and efficient personnel. Although the benefits to which the controlled connecting company was thus entitled were fewer than those inuring to the licensee from the license contract, the provision for payment by the sublicensee was like that in the license contract. When the instruments were offered for sale to the associated companies in 1927, a similar offer was made to the sublicensees and a like reduction of the contract fee to 2 percent was given those companies which purchased the instruments.

* * * for each other telephone company operating in the territory of the licensee in which the licensee owns a majority either of the voting stock or of the entire capital stock; provided, however, that on application by the licensee for the exclusion of all or any portion of such gross revenues of any such operating company the question shall be carefully considered and determined.

Furthermore, section 8 gives the licensee the right to extend to its connecting companies within its territory the privilege of using the connections with the telephone systems of the other associated companies of the Bell System; and also authorizes the licensee to extend to the connecting companies, on such conditions as it may determine, the benefit of such advice as to construction, maintenance, and operation of plant as it may receive from the licensor.

Revenues Derived From License Contract Fees.²²

Consideration of the revenues attributable to the license contract is necessary to a full appreciation of its importance in the history of the parent Bell Co. For the period of 14 years 8 months ended December 31, 1894, license fees, "rentals and royalties," aggregated \$24,287,739, or 54.56 percent of the total revenues of \$44,513,200 of American Bell. This was sufficient to pay all expenses of the company, instrument maintenance and depreciation, departmental expenses and taxes, exclusive of interest and those relating to long lines operations, and leave a balance equal to an average return of considerably more than 100 percent annually on the gross investment in telephone instruments.²³ In addition to the amounts shown above as license fees, the parent Bell organizations, of course, received franchise stock in most instances at the time the permanent licenses were granted, and considerable dividends on such franchise stocks, which should also be considered in connection with any statement of total revenues from the original Bell patents, but which were not reported as such by the American Bell Co. in its annual reports to stockholders. On the other hand, none of the figures quoted above includes any amount to represent the investment in the original Bell patents, nor any amount by way of expenses representing amortization of such patent investment or value.

Reductions in the rentals were made in 1894 and 1895, after the expiration of the basic Bell patents, but the license fees, i. e., "rental and royalties," for the 5 years ended December 31, 1899, amounted to \$7,341,286. This was sufficient to pay all of the instrument maintenance and depreciation and departmental expenses and taxes for these years, amounting to \$4,757,234, and leave a net profit of \$2,584,052. If applied to the average gross investment in telephone instruments, this figure would represent an average annual return, during the period in question, of more than 28 percent.

The total of license fees steadily increased from about \$2,500,000 in 1900 to a peak of more than \$34,000,000 in 1927. In terms of percentage of total revenues of the American Co.,²⁴ these fees represented approximately 25 and 23 percent for the years 1900 and 1901, respectively. From 1902, the year in which the 4½ percent of gross revenues fee replaced the "rental and royalty" payment based on

²² The sources drawn upon in the subsequent discussion are exhibit 132, chs. III and IV, and exhibit 1360-B, pp. 387-390, 393-398, 399, 402-404.

²³ This base does not include an evaluation of the Bell patents.

²⁴ The total revenues of the American Co. used in this comparison are, in addition to license fees, dividends, long-lines-telephone revenues, interest, and miscellaneous revenues. The amounts used for long lines in these calculations are not the net income figures. See exhibit 1360-B, p. 402.

number of instruments, through 1925, the fees varied from 15 to 18 percent of the revenues of the American Co. For 1926 and 1927, the 2 years in which the reduced fee of 4 percent was in effect, the fees constituted 15.84 percent and 12.86 percent, respectively, of the company's revenues. The total fees collected for 1926, however, fell off only about \$400,000 from the total for 1925, while the peak figure of over \$34,000,000 attained in 1927 was more than \$2,000,000 greater than the 1925 sum.

The total of license contract payments received by the American Co. in the period 1900 to 1927, inclusive, was \$356,017,714. This was sufficiently large to cover the total general department expenses, taxes, and depreciation, of \$226,404,492, and leave a balance of \$129,613,222. If applied to the average annual gross investment in telephone instruments during the period, it would amount to an average annual return of about 26 percent.

The total of license contract receipts naturally dropped off after 1927 with the reduction effective January 1, 1928, of 2 percent in the fee accompanying the termination of the rental of the telephone instruments, and the subsequent reduction of one-half of 1 percent as of January 1, 1929. The general business depression after 1929 also caused a decrease of the gross revenues upon which the fee was computed. The sums received as license contract payments decreased from approximately \$19,000,000, in 1928, to a low of \$12,957,975 for 1934. The amount increased in 1935 by almost a million, to \$13,819,198, and continued its climb upward in 1936, when it aggregated \$15,211,783.²⁵ For the period 1928 through 1935, the payments in question, reduced to terms of proportions, averaged almost 6 percent of the revenues of the American Co.

The American Co.'s Justification of the License Contract Charge.

The license contract fee long has been a bone of contention in rate controversies. The initial basis for the inquiries by public regulatory authority into the matter of the license contract is found in the fact that the fees paid by the associated companies are included in their operating expenses. Thus, if the payments are held to be proper, the rates charged by these companies to their patrons are supposed to be sufficient to cover, among other things, this item of expense, provided other conditions justify a level of rates sufficient to take care of these costs. In addition, the license fee is a continuing direct payment to the parent corporation, which may not be suspended in the event of reduced net income as would be the case with dividends on capital stock of the associated companies. These two factors need only to be combined with the third, lack of independent knowledge by public regulatory agencies of the license contract services and costs, to supply an explanation as to why the license fee has been so often controverted. For reasons set forth elsewhere,²⁶ these agencies have been compelled generally to rely upon the information regarding the license contract which the Bell System has chosen to supply.

Position prior to 1930.—Prior to December 1930, when the United States Supreme Court decided *Smith v. Illinois Bell Telephone Co.*,²⁷ the legal situation was such as to render it practically impossible for public regulatory bodies to remedy this lack of independent knowledge,

²⁵ \$66,560 of this sum attributable to the long lines department, was not billed by the licensor to that department until July 1937.

²⁶ See *infra*, p. 176.

²⁷ 282 U. S. 133.

or, in fact, to accomplish very much in the way of regulation of the license contract. The Bell licensees took the position in the many rate controversies that the question of the propriety of the license contract was one for the management of the operating companies to decide, and that it was, therefore, outside the scope of regulation. They contended that it was sufficient to prove that the value of the instruments and services furnished was greater than the amount of the fee paid, and that the charge was less than would have been the cost of obtaining the services from other sources. The cost to the American Co. of performing the license contract was declared by the Bell companies to be immaterial and irrelevant to the issues of the propriety of the contract and the fee charged thereunder.

In 1922,²⁸ and again in 1923,²⁹ the United States Supreme Court in effect approved this position when, on the evidence then before it, it upheld the license contract and indicated that bad faith or an abuse of discretion by the officers of the operating company had to be shown in order to secure a disallowance of the operating expense involved. These two cases were followed in many subsequent court and commission opinions until the *Illinois Bell* case of 1930.

Despite the position of the Bell companies that the costs of the American Co. were irrelevant and immaterial here, the insistence of some State commissions that they be given information as to these costs led to the preparation before 1930 by the American Co. of general estimates of the costs.³⁰ These estimates, which were used in rate cases during the period in question by Comptroller Heiss of the American Co.'s general department, were not very detailed, employing total operation expenses, taxes, rents, and miscellaneous expense, and certain financial costs.³¹

The decision in "*Smith v. Illinois Bell Telephone Company*."—The decision of the United States Supreme Court in this case marked a definite turning point in the attempts at public regulation of the license contract, and thus in the proof developed by the American Co. in defense of the contract. Therein, the Court, in effect reversing the *Southwestern Bell* cases, *supra*, on this point, was not content with proof of the value of the license contract services, but ordered that the cost to the American Co. of furnishing the services in question should be found. The Court said in part:³²

In view of the findings, both of the State commissions and of the court, we see no reason to doubt that valuable services were rendered by the American Co., but there should be specific findings by the statutory court with regard to the cost of these services to the American Co. and the reasonable amount which should be allocated in this respect to the operating expenses of the intrastate business of the Illinois company in the years covered by the decree.

The license contract relations were thus removed by the Smith decision from the realm of management, where they had enjoyed substantial immunity from public investigation and regulation and

²⁸ *City of Houston v. Southwestern Bell Telephone Company*, 259 U. S. 318.

²⁹ *State of Missouri, ex rel. Southwestern Bell Telephone Company v. Missouri Public Service Commission*, 262 U. S. 276.

³⁰ See exhibit 1950-A, ch. II, pp. 59-112.

³¹ Discussion of the treatment by Heiss at this time of a possible deduction for nonlicense activities of the American Co. is deferred until the subsequent exposition concerning the present nonlicense deduction. *Infra*, pp. 163-165.

³² 282 U. S. 133, 157. See also *Western Distributing Company v. Public Service Commission of Kansas*, 285 U. S. 119; *Natural Gas Pipeline Company of America v. Slattery*, 302 U. S. 300. Appendix 8 contains a list of court and commission cases involving the license contract which were decided after the *Smith* case, *supra*. The U. S. Supreme Court has not passed upon the American Co.'s showings with reference to the license contract since the *Smith* case.

placed within the power of the public regulatory agencies for scrutiny.

Justification of the license contract fee after 1930.—Since the Illinois Bell decision of 1930, the cost to the American Co. of performing the license contract rather than the value of such performance to the licensees has become the paramount issue with respect to the propriety of the license payment as an allowable operating expense of the associated companies. In practice, this means that in proceedings involving the level of associated company rates, it is insufficient for the company to make a showing as to the value of the work allegedly performed for it by the American Co., under the guise of license contract services. The company now must present also a satisfactory showing with respect to the costs it contends are incurred by the American Co. in conducting such work. This showing is usually made through an employee of the American Co. appearing on behalf of the associated company. Consequently, the following discussion of the American Co.'s justification after 1930 of the license contract fee treats not only of elements advanced by the company's representatives as justification for the license fee, but also of the allocations of the costs connected with these elements.

It was previously observed that Comptroller Heiss of the American Co.'s general department used general estimates of license contract costs in the rate cases of certain associated companies before 1930. Showings as to these costs made by representatives of the American Co.'s general department³³ in rate proceedings after the *Smith case* of that year have become more polished and refined.

There is one fact, however, which is basic in all the license contract cost estimates of the American Co., from the first ones down to those of the present day,³⁴ namely, that the general department does not record its expenses on its books in such fashion as to segregate currently or permit a segregation of the expenses incurred in the performance of the license contract.³⁵ Thus, in order to determine what expenses are to be classified as license contract costs, it is necessary to analyze the expenses with reference to the functions or activities giving rise to them and the relation between those functions and the license contract. This means that the attitude and judgment of the person or persons responsible for the allocations of expenses to license contract costs toward the relation of the various activities of the general department to the contract play a decisive role in the computation of such costs.³⁶

Schedule 1 of appendix 9, drawn from the statements of license contract costs prepared by the comptroller's department of the American Co. for the recent *Louisiana Rate case*,³⁷ sets forth the costs which, according to the American Co., it incurred in performing the license contract services in 1936. This schedule is illustrative of the type of break-down of costs the company has made since the *Chicago rate case* hearings of 1932, where this kind of showing was first used.³⁸ It

³³ Comptroller Heiss and Assistant Comptroller Crunden of the American Co. have been the principal witnesses with respect to the license contract cost statements introduced into rate cases of the licensees. Most of the other members of the general department who have testified concerned themselves with the technical work allegedly conducted under the license contract.

³⁴ The character of the various showings of license contract costs which have been made by the American Co. since 1920 has been reviewed in exhibit 1950-A, pp. 19-37, and exhibit 1951-B, pp. 102-112.

³⁵ See testimony of Assistant Comptroller Crunden, of the American Co., Transcript of Record, Federal Communications Commission, Special Investigation, Docket 1, at pp. 1303-1308.

³⁶ See exhibit 1950-A, pp. 200-202; also pp. 62-65, 114-115, 191-193; and testimony of Crunden cited in the preceding footnote.

³⁷ *Southern Bell Telephone & Telegraph Co. v. Louisiana Public Service Commission*, 174 So. 180 (La. Sup. Ct. 1937).

³⁸ The nature of the break-downs made in the telephone rate cases of 1931 is treated in exhibit 1950-A, pp. 113-147.

will be noted that the total of alleged license contract costs shown on the schedule, approximately 23½ million dollars for 1936, exceeds the total license contract receipts of about 15½ million dollars for that year by more than 8 million dollars. This condition is by no means peculiar to 1936. Beginning with the year 1928, alleged costs have exceeded receipts by substantial amounts, ranging from about 2½ million dollars to more than 12 million dollars.³⁹

Another fact to be observed by reference to the schedule in question is that, after the nonrecurring special investigation expenses are completely excluded from the picture, the total license contract costs aggregate approximately 95 percent of total departmental costs.⁴⁰ The reason for this result is treated at a subsequent point.⁴⁰

(1) *Elements considered by the American Co. in allocations of expenses to alleged license contract costs.*⁴¹—It was pointed out above that the American Co.'s allocations of expenses as license contract costs depend upon the exercise of judgment by the officials responsible therefor as to the relation between the license contract and the functions or activities causing the expenses. It is important therefore in connection with this review of the showings of license contract costs made by the American Co.'s representatives to indicate also the functions or activities for which the expenditures were incurred.

(a) The work of the general department:⁴² The general department manages the assets of the American Co.,⁴³ which consist principally of stock of the operating telephone companies, now in the amount of more than 2 billion dollars, which yielded approximately 166 million dollars in dividends in 1936.⁴⁴ The assets under the supervision and control of the department also include a large sum represented by advances to the Bell System companies.⁴⁵ The loans to the associated telephone companies approximated 95½ million dollars as of December 31, 1936,⁴⁶ on which interest is currently levied at the rate of 5 percent per annum⁴⁷ (4.9 percent per annum if paid monthly).

The general department of the American Co. also conducts the work, other than that of the technical research and development, allegedly performed by that company in fulfillment of the license contract. The technical research and development activities are carried on by Bell Telephone Laboratories, Inc., although the general department still contains a development and research department, apparently of a supervisory nature. The work of the general department is departmentalized, and includes the following departments:⁴⁸ Development and research, operation and engineering, operation—general, personnel, information, legal, comptroller, treasurer, secretary, general service bureau, and administration. Some of the functions of these departments consist of studies of the problems of the Bell System, or the

³⁹ For a statement showing license contract receipts and alleged costs, 1923-36, inclusive, see appendix 9.

⁴⁰ See *infra*, at pp. 147-148.

⁴¹ Whenever costs or license contract costs are mentioned in the discussion under this subchapter heading and the remainder of this chapter, it is understood that the reference is to costs alleged to be incurred by the American Co. on account of license activities and are to be considered at no time as costs admitted by the investigation staff or the Commission.

⁴² See exhibit 80, pp. 31 ff.; exhibit 1360-A, pp. 156-165; exhibit 131, pp. 1-7.

⁴³ For a discussion of the composition of the assets of the American Co., see exhibit 1360-B, pp. 516-534.

⁴⁴ See annual report of the American Co. for 1936, pp. 24-26. For statements showing the dividends received by the American Co. before 1936, see exhibit 1360-B, pp. 389, 394-397.

⁴⁵ See exhibit 1360-B, pp. 523-526. The amount of interest which the American Co. has received is shown in that exhibit at pp. 389, 395-397.

⁴⁶ See Annual Report to Stockholders of the American Co. for 1936, p. 27.

⁴⁷ Until Oct. 1, 1936, this rate was fixed at 6 percent (5.88 percent net).

⁴⁸ For a description of the functions, personnel, and expenses of all but the operation and engineering and the development and research departments, see exhibit 1950-A, pp. 29-58. Similar data on the two excepted departments will be found in exhibit 1951-B, pp. 1-24.

furnishing of advice and assistance directly to the licensees. Other work, such as that conducted by the general service bureau, is concerned with assistance to departments of the general department.

(b) The research and development work:⁴⁹ As reference to schedule 1, appendix 9, will show, the research and development costs constitute by far the largest single item of departmental costs included in those ascribed by the American Co. to the license contract. They aggregated approximately 9¼ million dollars in 1936, as against total departmental license costs of about 19 million dollars, or roughly one-half of that total. Bell Telephone Laboratories, Inc., now carries on research and development work for the American Co., as well as for Western Electric, and Electrical Research Products, Inc.⁵⁰ In 1934, the American Co.'s development and research department was consolidated with the Bell Telephone Laboratories, leaving under Dr. Jewett, as an American Co. vice president in charge of the department, a small administrative office force, and a London office for foreign contacts. Dr. Jewett is also president of the Laboratories. Since that consolidation, work of the character formerly conducted by the development and research department of the American Co. has been within the scope of the functions of Bell Telephone Laboratories.

The proportion of the billable expenditures of the Laboratories charged to each of its three "customers," the American Co., Western, and Electrical Research Products, Inc., for the period 1925 through 1935, is shown in table 40, page 196, *infra*. It will be observed from that table that the proportion of the billable expenditures charged to the American Co. steadily increased, while the billings to Western have proportionately declined. In 1934 and 1935, however, the increase in the proportion billed to the American Co. was due principally to the transfer of American Co.'s research activities to the Bell Laboratories, Inc.

Authorizations⁵¹ are prepared by Laboratories prior to the inauguration of the work, and show the estimated amount of expenditures, proposed classification, and distribution of billing for the work. This determination of which company should be billed is the result of the exercise of judgment on the part of those in charge at Laboratories, with respect to the application in the particular case of certain broad rules, setting forth the work within the province of each customer company. These authorizations for billing are then sent to the customer involved for its approval. If there is an objection by the customer as to the amount of the authorization, or as to the propriety of the allocation of charges, the matter is referred to the Laboratories, and after consideration by it and the customer companies that may be concerned, there is an agreement upon the allocation of the expense and the appropriate customer approves the authorization. The customers are subsequently billed on a cost⁵² basis, for the work done under their respective authorizations.

⁴⁹ See exhibit 231, pp. 72-79; exhibit 243, pp. 1-205; exhibit 202, pp. 12-31; exhibit 191-A, pp. 111-151. See also testimony of Dr. Jewett, vice president of the American Telephone & Telegraph Co., and president of Bell Laboratories, Transcript of Record, Federal Communications Commission, Special Investigation, Docket 1, pp. 2539-2926, and his subsequent letter to the Federal Communications Commission, exhibit 243-A, pp. 1-26, and testimony of an assistant chief accountant of the investigational staff, Transcript of Record, Federal Communications Commission, Special Investigation, Docket 1, pp. 2571-69, 2931-38. See *infra*, ch. 7.

⁵⁰ See table 40 p. 196, for allocation of total engineering and research expenses between Western Electric, American Telephone & Telegraph Co., and Electrical Research Products, Inc.

⁵¹ As to the matter of authorizations, see exhibit 243, pp. 4-9; and testimony of Dr. Jewett, Transcript of Record, Federal Communications Commission, Special Investigation, Docket 1, pp. 2645-56.

⁵² Cost as used here includes interest on advances by American Co. and Western Electric Co., to Bell Laboratories, the latter having capital stock of only \$100,000, and advances from the American Co. and Western Electric Co. of over \$5,000,000 at the end of 1935.

The certain broad rules, referred to above as being used in the decisions as to billings, will not be given in detail here.⁵³ The principal categories which these rules are designed to mark off may, however, be described in brief fashion. With respect to the distinction of the research and development work ascribed to Western from that attributed to the American Co., an abbreviated statement of the categories has been made by Dr. Jewett, as follows:⁵⁴

* * * When the laboratories was formed in 1925, the Western Electric Co. ceased to have an engineering department, and the functions that are normally performed by an engineering department of a manufacturing company have been continued in the Bell Telephone Laboratories. The work done for the account of the Western concerns itself largely with those near-at-hand problems necessary for the fabrication of devices or systems which it is expected will be manufactured and sold. The Western, therefore, as in the case of any other manufacturer, supports such development as can be fairly immediately incorporated in its product.⁵⁵

The American Telephone & Telegraph Co., on the other hand, pays for work of a more fundamental character, because it deals with the production of the basic knowledge on which specific applications, whether by the manufacturer or the operating companies, are later to be based. The work for the American Telephone & Telegraph Co. is concerned in general with the first application of scientific knowledge to the long-range problems of the communication art.

It should be pointed out that the expenses for which the Laboratories bills the American Co. do not relate solely to fundamental research. Laboratories also furnishes to the associated companies advice and information regarding new developments, studies certain problems of the operating companies, and recommends changes with respect to new apparatus and systems for use by the operating companies.

Electrical Research Products, Inc., is, according to the rules of Laboratories billed for⁵⁶ "specific development and design work in applying principles developed by telephone research to development or improvement of special products outside the telephone field, such as sound picture systems manufactured by the Western Electric Co. or others and sold through Electrical Research Products, Inc."

Almost all of the development and research costs of the American Co., currently around 9½ million dollars a year, are included in license contract costs. A deduction, amounting to approximately \$500,000 per year for the last few years, has been made from the above figure in arriving at the amount allocated by the company to license costs. This deduction is made to cover that part of the cost of research and development work which has, or is likely to have, a relationship to the apparatus manufactured by Western Electric for sale to non-Bell customers, or developments in the nontelephonic field in connection with which the American Co., Western Electric, or E. R. P. I. license others as manufacturers. Since Western has customers other than the licensee companies and long lines, the American Co. considers that the costs possibly attributable to the non-Bell customers of Western should be eliminated from those costs ascribed to the license contract.⁵⁷

⁵³ For a statement of these rules, see exhibit 243, pp. 6-7.

⁵⁴ See exhibit 243-A, pp. 18-19; also testimony of Dr. Jewett, Transcript of Record, Federal Communications Commission, Special Investigation, Docket 1, p. 2643, et passim.

⁵⁵ A study of over 70 percent of the cases performed by Laboratories for Western Electric is presented in exhibit 2092, pp. 1-10.

⁵⁶ See exhibit 243, p. 7.

⁵⁷ The mechanics of this deduction are discussed in exhibit 1951-B, ch. IV, pp. 60-89.

(c) Patent services:⁵⁸ The patent rights secured by the associated companies under the license contract are advanced by the American Co. and its licensees as one element of the consideration the latter receive for their payment. The activities of the American Co. in this respect consist of obtaining patent rights through (1) the development and research conducted for it, (2) purchase from owners of desired patents, and (3) cross-license agreements. The American Co. also undertakes the protection of the associated companies against infringement claims. The licensee companies are alleged to benefit mainly from the patent activities of the American Co. in two ways: First, by their employment of improvements in the telephone art, and, second, from the ability of the licensor to conduct development and research work for the whole system more economically and efficiently than the individual operating companies.

The alleged license contract costs connected with patent services consist chiefly of the cost of development and research, and a portion of the costs of the legal department. No item of cost is included by the American Co. in its showing of license contract costs to cover contingent liabilities arising from claims against the company for patent infringements.

(d) Financial costs:⁵⁹ As appears from schedule 1 of appendix 9, the American Co. includes in its license contract costs two items of alleged cost which relate to the money-lending activities of its general department, namely, "Cost (net) incurred in holding funds available during each year to meet cash requirements of licensee companies" and "Cost (net) of temporary financing." Both of these items are regarded by the American Co. as costs over and above the interest charged the licensees on money advanced to them.

The relation of the money-lending activities of the American Co. to the license contract costs is an important one, since it appears that during the period 1923 through 1935, these two financial costs averaged 17.57 percent of the total license contract costs shown by the company for that period.⁶⁰ For 1936, as reference to schedule 1, appendix 9, discloses, almost 2½ million dollars for the cost of holding funds available, and more than a million dollars for cost of temporary financing, were allocated to license contract costs.

The cost of holding funds available is incurred, according to the American Co., because, in order to make advances to the licensee companies, it must hold available, in reserve, large supplies of liquid assets or funds. The reserved funds which are allegedly held available for making advances are, however, intermingled with other assets of the same kind, so that the amounts of these assets considered as so held available are the result of the exercise of judgment.

Although these funds are invested, in part, in interest-bearing securities or other assets, the American Co. maintains a loss; that is, a "cost" is incurred in holding the funds because the interest received is less than the rate which the company alleges it must pay for the funds, or its "cost of money." The term "cost of money," as used by the American Co., means, in general, the "cost" which it incurs on stock and bond issues and on short-term borrowing. According to the American Co., its "cost of money" is represented by its require-

⁵⁸ See *infra*, chs. 7 and 8. See also exhibit 1951-B, pp. 90-100; and testimony of Dr. Jewett, Transcript of Record, Federal Communications Commission, Special Investigation, Docket 1, p. 2769; exhibit 1989, pp. 20-24, and exhibit 2110, p. 3.

⁵⁹ See exhibit 1359, pp. 17-42.

⁶⁰ See *id.*, table 1, at p. 3.

ments as to dividends, interest, and the amortization of discounts, premiums, and expenses of issuance. The "cost of money" rate employed by the company is derived by dividing the average book value of capital stock (including premiums and surplus), and the average amounts of funded debt and short-term obligations, into the dividends and interest paid on these outstanding securities and obligations.⁶¹

The cost of temporary financing is incurred, according to the American Co., because the funds advanced to the licensee companies in the form of temporary loans cost it something more than the net interest rate of 4.9 percent (5 percent gross)⁶² usually charged on these loans; that is, the American Co.'s "cost of money" exceeds the interest received on the temporary loans. With respect to this item of cost, it should be observed that, although it is included by the American Co. in statements of total license contract costs, that company has allocated this cost to individual associated telephone companies or to areas thereof in only two cases since 1923.⁶³

The third and somewhat minor item of alleged financial cost included in license contract costs by the American Co. is "Cost (net) of carrying investment in physical property."⁶⁴ This item represents a charge made by the American Co. for carrying costs, in the nature of interest, on physical property used in the performance of license services. In general, this property consists at the present time of furniture, fixtures, and equipment used by the general department in New York City. Prior to 1928 this was an important element of cost, because included in the physical property were the telephone instruments then owned by the American Co.

(e) Taxes: ⁶⁵ From schedule 1, appendix 9, it will be observed that the taxes included in license contract costs for 1936 were principally New York State's franchise and excise taxes, and social security taxes. The franchise and excise taxes are, of course, imposed against the American Co. because it is a New York corporation and does business in that State.

(2) *Allocation of alleged costs as nonlicense.*⁶⁶—The various elements included by the American Co. in its allocations of total license contract costs have been described. Reference to schedule 1, appendix 9, however, shows that in the case of all the elements, except ⁶⁷ "Cost of temporary financing," there is an allocation to "nonlicense" which is deducted by the company in its process of computing the alleged costs of rendering license contract services. The determination of what is to be considered as included within the scope of the license contract has been and is one of the most important problems arising in the computation and presentation of license contract costs. In order to gain an adequate comprehension of this nonlicense deduction, it is necessary, before describing the present type of analysis, first introduced in the 1932 hearings of the *Illinois Bell rate case*,⁶⁸ to review briefly the fashion in which this matter was treated prior to 1932.

⁶¹ For further treatment of this computation, see *infra*, ch. 15.

⁶² 5.88 percent net (6 percent gross) until October 1, 1936.

⁶³ *Matter of Wisconsin Telephone Company*, case No. U-4034 before Wisconsin Public Service Commission (1931); *Southwestern Bell Telephone Company v. City of San Antonio*, 75 F. (2d) 880 (C. C. A. 5th, 1935). In both cases, the allocations in question were made in hearings held in 1931. See exhibit 1356, pp. 128-131.

⁶⁴ *Id.*, at p. 5.

⁶⁵ No analysis of the general department's taxes was introduced into the record of the special investigation.

⁶⁶ See exhibit 1960-A, pp. 119-120.

⁶⁷ This amounted to \$223,954 of departmental expense in 1936 or about 5 percent of total departmental costs of \$19,902,584 (excluding special investigation expenses).

⁶⁸ See *Lindheimer v. Illinois Bell Telephone Company*, 292 U. S. 151 (1934).

In the annual report of the directors of the American Co. to the stockholders for the year ended December 31, 1920, it was stated that:⁶⁹

The cost which the rendition of these services imposes upon the American Telephone & Telegraph Co. cannot be ascertained with entire accuracy, because it depends upon the elimination of that portion of general expense which would normally be incurred by a company owning securities of other corporations, but not obligated to perform such services, as well as upon the consideration of other items, all of which must of necessity be estimated.

But Comptroller Heiss of the American Co., appearing as witness for certain of the licensee companies in their rate cases in the twenties, evinced uncertainty as to the necessity for, as well as the extent of, a deduction for expenses which might be regarded as nonlicense.⁷⁰ In some of the cases in this period, the comptroller was willing to concede that a comparatively small round sum might be deducted to cover supervisory (\$500,000) and tax (\$1,000,000) expenses related to the American Co.'s stockholdings.

In the fall of 1929 studies of license-contract costs were conducted by the comptroller's department on the basis of the following concept:⁷¹

To treat the American Co. as having the dual functions of a holding and service performing company. This view obviously requires that, in arriving at the cost of license contract services, there be estimated and eliminated from general department accounts that portion of general expense, taxes, etc., which would normally be incurred by a holding company not obligated to perform services for its subsidiaries.

In the hearings in the Bell Telephone rate cases of 1931,⁷² the year after the Illinois Bell decision, Comptroller Heiss, who appeared as witness on the license-contract costs, admitted for the first time that there were certain items of expense which should be allocated specifically to nonlicense.⁷³ These arose from activities regarded as nontelephonic in nature, or related to nonlicensee companies, or both, such as trade-mark service,⁷⁴ or work done for Electrical Research Products, Inc. As for the remainder of the expenses, however, Heiss' aim seemed to be to secure a more precise classification of the expenses identified as license contract costs, rather than to analyze the expenses in order to segregate those which could be allocated to nonlicense.⁷⁵ He proceeded on the assumption that it was practically impossible to obtain such a refinement of expenses as would enable nonlicense expenses to be isolated. Heiss thus introduced, in the form of a so-called lump-sum deduction to cover possible nonlicense activities, what was in effect only a refinement of the round-sum concession made in this testimony before 1930.⁷⁶ The "lump sum" deduction was intended to include, among other things, certain "holding company" costs related to the holdings of stock in, and

⁶⁹ This is quoted in exhibit 1950-A, pp. 91-92.

⁷⁰ Id., at pp. 77 ff., especially at pp. 98-108.

⁷¹ Id., at pp. 151, 152; and pp. 148-168.

⁷² In re *Ohio Bell Telephone Co.*, case No. 3307, before Ohio Public Utilities Commission; *Michigan Bell Telephone Co. v. Michigan Public Utilities Commission*, case No. 1322, in Federal District Court, Eastern District of Michigan; *Matter of Wisconsin Telephone Co.*, case No. U-4034, before Wisconsin Public Service Commission; and *Southwestern Bell Telephone Co. v. City of San Antonio*, 75 F. (2d) 880 (C. C. A. 5th, 1935) (Heiss testified in October 1931). See exhibit 1950-A, pp. 113-147; also Id., pp. 170-178, for a discussion of studies in 1931 of license-contract costs.

⁷³ Id., pp. 119-122.

⁷⁴ Id., pp. 198-201.

⁷⁵ Id., ch. III, at pp. 127-128.

⁷⁶ Id., at pp. 128-134. Apparently this "lump sum" deduction was superimposed by Heiss upon the expenses of the general department after these had been reviewed by the various department heads and Heiss, and the specific nonlicense items eliminated. Id., at pp. 130-134, 173.

financing of, its licensees, such as general administration of corporate holdings in telephone and other subsidiary companies, arrangements for permanent financing by licensee and other subsidiary companies, collection of interest and dividends receivable from investments, custodianship of these investments, etc.

The lump-sum deduction was too conjectural and inconclusive in nature to be satisfactory when subjected to examination in rate cases.⁷⁷ Consequently, for the *Chicago Rate case* hearings of 1932, Heiss developed a more refined presentation of costs in order to show the cost of activities regarded by him as without the scope of the license contract.⁷⁸ The result of this process, which represents, with some modifications, the method now in use for determining and showing license contract costs, seems to be the disappearance of any allocation to nonlicense of costs arising from the holdings of securities of the licensees. Essentially the nonlicense deduction then worked out and still in effect includes only costs regarded by the American Co. as incurred for two somewhat overlapping categories of work: (1) Work of a nontelephonic character, and (2) work done directly or indirectly for nonlicensed companies.⁷⁹ An example of such activities is found in those related to E. R. P. I.

(3) *Apportionment of total license contract costs among long lines and the licensed companies or areas.*—The problem of determining license contract costs extends beyond the computation of total costs. Since the propriety of the license fee is usually in issue with respect to a particular operating company or some local area served by it, public regulatory agencies have naturally been desirous of ascertaining the amount of those costs assignable to the company or area with which they were then concerned. When questioned on this matter the American Co.'s representatives contended, before 1930, that it was impossible to determine the license costs attributable to any one operating unit, such as the long lines department, a licensee company, or a certain local area served by a licensee.⁸⁰ This position was based upon the premise that much of the license contract work was performed in order that the general department would have available advice and assistance for all the licensee companies, and that even when work was done for any one company it was available and applicable to the other companies, although it might turn out that in any one year some companies would require or could use only certain types of assistance.

In addition, however, to holding that "there should be specific findings by the statutory court with regard to the cost of these services to the American Co.," the United States Supreme Court, in the *Illinois Bell case* of 1930, *supra*, was of the opinion that there should be "specific findings as to—" ⁸¹

* * * the reasonable amount which should be allocated in this respect to the operating expenses of the intrastate business of the Illinois company * * *.

But in the Bell Telephone Rate case hearings of 1931, Heiss continued to maintain that it was impossible to ascertain the license

⁷⁷ See exhibit 1950-A, at pp. 129-130.

⁷⁸ *Id.*, at pp. 196-197, and pp. 222-225. See also *id.*, at p. 132.

⁷⁹ *Id.*, at pp. 197-199, 214-220. It is an interesting development in the presentations by American Co. representatives that although fundamentally the determination of license contract costs remains a matter of judgment and viewpoint, those representatives, since 1931, have acquired more confidence in the results of their considerations. Compare *id.*, at pp. 191-193 (1932 and subsequently) with pp. 62-65 (before 1930) and pp. 114-115 (1931).

⁸⁰ See exhibit 1950-A, at pp. 65-71.

⁸¹ *Id.*, at p. 113.

contract costs for any one operating unit.⁸² He could only suggest that the total cost for all the companies be apportioned "on some arbitrary basis, such as revenue, stations, or plant, average plant in service, or operating expense, or some other basis." Two attempts to arrive at⁸³ apportionments on some such basis were presented in exhibit form in 1931.

It was these attempts, however, that were developed into the current apportionments of departmental license costs among long lines and licensed companies or areas.⁸⁴ The crude beginnings of 1931 were first refined for the *Chicago Rate case* hearings of 1932, when the total license contract costs computed for each department were apportioned to the Chicago area involved in that case. The bases used in the Chicago hearings for the apportionments of departmental license costs have been followed generally with some minor exceptions.⁸⁵

The method employed in the Chicago hearings consisted of the selection by the head of the department in question, or the comptroller, or both, of such factors as employees, telephone revenues, expenses, plant in service, etc., for each department, and for items of cost such as taxes. The choices were based upon the exercise of judgment by the persons indicated as to the connection between certain of those factors and the department or item in question. Then a ratio was derived from the relative size in the particular operating unit involved, licensee company, city, etc., of the factors chosen with respect to the size of the same elements in all the operating telephone companies of the Bell System, including the long lines department and the Bell Telephone Co. of Canada. The resulting ratio for each department or item of cost, which, of course, depended upon the factors chosen therefor, was then applied to the total license contract costs of the department or item of cost in question, and the result was regarded as the amount assignable to the particular company or area for the department or item of cost concerned.⁸⁶

The process described is merely a means of apportioning costs. It is not a determination of the actual costs of performing work for any one operating unit. As to the possibility of such a determination the American Co. still holds to the premise it maintained in the period before 1930.⁸⁷

⁸² *Id.*, at pp. 115-119, especially the quotation from *Michigan Rate case* testimony, *id.*, at pp. 116-117.

⁸³ In the *Madison, Wis.*, and *San Antonio, Tex.*, *Rate case* hearings of that year. These cases are cited supra, p. 164, fn. 72. See *id.*, at pp. 118-119.

⁸⁴ See exhibit 1950-A, at pp. 193-198.

⁸⁵ These bases are discussed in exhibit 1950-A, pp. 226-232 (operation-general); 235-237 (public relations); 243-245 (personnel relations); 250-251 (benefit and medical); 253-255 (information); 263 (legal); 273 (comptroller's); 285-287 (treasury); 292-295 (secretary); 299-300 (general service); 304-305 (sundry items, including administration); and exhibit 1951-B, pp. 102-135 (operation and engineering, development and research).

⁸⁶ The bases employed in the recent *Louisiana Rate case* of the Southern Bell Co., *Southern Bell Telephone and Telegraph Co. v. Louisiana Public Service Commission*, 174 So. 180 (La. Sup. Ct. 1937), for apportioning the license contract costs of 1936 to long lines and the Louisiana area of the Southern Bell Co. are shown in appendix 9. In this connection, it should be noted that in October 1936 the amount to be billed to the long-lines department by the general department for "license contract" work was fixed, as of January 1, 1936, at the amount of the general department's license costs apportionable to long lines under this rate-case method of apportioning costs. The actual billing to long lines for 1936 included its alleged share of the departmental costs and social-security taxes, apportioned as shown in appendix 9, but excluded the other taxes of the general department and the so-called "financial costs." This new mode of determining the amount of the service fee to be paid by the long lines department was allegedly introduced for the purpose of terminating the loss claimed by the American Co. in performing services for one of its own departments. The amount billed to long lines for alleged services in 1936 was \$1,762,160 (includes \$529 attributable to Transpacific Communication Co.), as against an estimated total of \$1,340,000 on the 1 1/4-percent basis. See exhibit 1950-A, at p. 223, and exhibit 1951-B, at pp. 105-106.

⁸⁷ See e. g., memorandum of Assistant Vice President Cox, quoted in exhibit 1950-A, p. 232.

Analysis of the American Co.'s Claims in Justification of the License Contract Charges.

It has been observed above that license contract costs are not recorded as such on the books of the American Co., so that those costs must be determined by the study of costs of the general department and the application of judgment thereto. The judgment applied by American Co. officials appears to be governed by their conception as to the fundamental relationship between the license contract and the American Co. itself. It thus becomes important to examine briefly that conception, which not only has resulted in the present showings of costs, wherein approximately 95 percent of the general department's expenses are allocated to license contract costs, but was apparently the cause also of the somewhat begrudging manner in which the allowance for so-called "holding company" costs was made in cases before 1932.

Representatives of the American Co. seem to have interpreted the history of the license contract as revealing that from the early beginnings of the Bell System the parent company rendered advice and assistance to the licensees under the license contract with an eye solely to the interests of the licensees.⁸⁸ These representatives view the work done by the general department, its stockholdings, and advances, as the outgrowth of the performance of services under the license contract. According to recent rate-case testimony, the American Co. "exists for the purpose of rendering service to its subsidiary companies,"⁸⁹ and officials of the company have professed to see no reason for its existence in any substantial form apart from the performance of license contract services. The American Co.'s holdings of approximately 2 billion dollars of securities in the licensees and its lending of large sums of money to them are deemed by the company's representatives to be tied up with the performance of the license contract.⁹⁰

The explanation given by the company's representatives is to the effect that the acquisition of the stock was not done in the role of a "holding company," since it was the consequence of the financial advice and assistance which the licensor allegedly supplied under the license contract. In the process, it is asserted, the stock of licensees was either purchased directly by the licensor in order that the licensees would obtain funds thereby or else it was acquired because the licensees were allowed to liquidate in stock advances made to them by the licensor. And, it is pointed out, the company now holds the stock "to provide a centralized basis of credit as a background to its obligation to finance companies," and does not buy and sell the stock. Thus it is argued that the American Co. is not a "holding company" in the ordinary sense. With respect to the advances themselves, the American Co. takes the position that its costs of maintaining the lending relations with the licensees exceed the interest received on loans made, which gives rise to certain financial costs.

The viewpoint of the representatives of the American Co. has manifested itself in a theory derived from their interpretation of the history of the American Co. and its contractual and stockholding

⁸⁸ See excerpt from Heiss's testimony in *Oregon rate case* in 1934, quoted in exhibit 130, p. 79.

⁸⁹ See exhibit 1950-A, pp. 204-205; and testimony of Heiss, Transcript of Record, Federal Communications Commission, Special Investigation, Docket 1, pp. 1201-1206.

⁹⁰ See exhibit 131, appendix A; exhibit 1950-A, pp. 204-205; and testimony of Heiss, Transcript of Record, Federal Communications Commission, Special Investigation, Docket 1, pp. 1110-1114, 1242-1243.

relations with the licensees. This theory was summarized by Comptroller Heiss in the course of his recent testimony before the Federal Communications Commission, as follows:⁹¹

* * * That the American Co. general operating organization is an organization which, in reality, spreads itself out over the 25 associated or licensee companies, doing in one place the things that can be done there more efficiently and economically than they could be done by each company separately; and that, as a practical matter, what you should do is check the entire expenses of the general department of the American Co., eliminating the little, minor things, where the benefit of this work seeps out to the outside activities and in a sense slices down that cost of the general department and assigns to each company a part of the expenses of the American Telephone & Telegraph Co. * * *

In other words, all of the expenses of the American Co.'s work in the general department is such that all of its expenses ought to be apportioned and allocated to the various associated companies. * * *

* * * I cannot conceive of any situation existing anywhere where the American Co. should be expected to spend \$25,000,000 for the benefit of rendering telephone service in this country—that those expenses should not be included as a part of the cost of giving the telephone service. In other words, the American Co. should not be asked to spend \$25,000,000 simply for the sake of developing or helping itself earn its dividends.

Under this theory, all the costs of the general department, except these regarded as nonlicense because connected with nontelephonic activities and nonlicensed companies, are considered as license contract costs.⁹² These costs amount to approximately 95 percent of the general department's total costs, because none of the costs of the general department of the American Co. are considered directly applicable to holding-company activities. It has been contended by the comptroller of the American Co. that it is a servicing company, not a "holding company," because it does not buy and sell the stocks of the licensees but simply holds them.

The American Co.'s contention that the holding-company aspect does not exist in its case, invites consideration of its activities from the following viewpoints: (1) Cost of work done to protect its investment in securities of the licensees and others, and (2) costs incident to the ownership of the securities. The first of these rests upon the fact that the American Co., as almost the sole owner of all but a few of the licensees, benefits by the maintenance and enhancement of the status of those companies, resulting from much of the work performed by the general department, and thus should fairly bear at least a portion of the expenses now allocated as license costs.⁹³ Obviously it is not in the position of an ordinary stockholder. This is shown by the fact that the parent company has continued to furnish the services after 1928, although beginning in that year the company has been, according to its showings, incurring a substantial deficit in the performance of the license contract.⁹⁴ Moreover, the license contract has never been so definite on the matter of the work to be done as to preclude the American Co. from fixing the character of such work with at least some consideration for its investment interest. Many of the provisions of that contract may be regarded as the result of

⁹¹ Transcript of Record, Federal Communications Commission, Special Investigation, Docket 1, pp. 1140-1141. See also exhibit 1950-A, pp. 202-203.

⁹² Until 1932 some form of concession was made to the possibility that these were certain financial and corporate expenses which were not properly to be allocated as license contract costs. The current theory of the company obviously includes in license costs any such expenses.

⁹³ See exhibit 1950-A, pp. 78-84, 134-143, 209-213; and ch. 7, *infra*. Compare testimony of Comptroller Heiss, Transcript of Record, Federal Communications Commission, Special Investigation, Docket 1, pp. 1200-1201.

⁹⁴ See exhibit 1950-A, pp. 108-147, 210. Compare testimony of Heiss, Transcript of Record, Federal Communications Commission, Special Investigation, Docket 1, pp. 1230-1231; and of Dr. Jewett, *id.*, pp. 2760-2761.

the performance of certain work by the American Co., undertaken in order to protect, maintain, and enhance its vital stake in the telephone business.

Study of the evolution of the license contract work discloses that the performance of much of the advice and assistance of various kinds for the licensees can be viewed as part of a program designed by American Bell and its successor, American Telephone & Telegraph Co., to maintain and build up a profitable system for the benefit of its investment interest. Thus, the origins of the services appear to have been based upon the natural efforts of a patent holder to promote the development of the telephone business established by the use of the patent, which efforts included the extension of aid to the somewhat inexperienced licensees,⁹⁵ as well as constant activity to prevent the encroachment of competitors.⁹⁶ Moreover, the option provisions in the temporary contracts gave rise to the possibility that the licensor might itself own the operating plants at some future date. And when the options became practically ineffective because of the grant of permanence to the licensees, there was the stock interest of the licensor, usually acquired in the first instance upon the granting of the perpetual licenses, to constitute the incentive to furnish aid to the licensees.

Certain engineering, research and other work was conducted by the licensor company from an early date, although it was many years after the inception of advice and assistance to the licensees before the work done assumed anything like its present form.⁹⁷ However, until November 1918 no license contract in effect between the licensor company and the associated companies contained any description of work to be performed.⁹⁸ So the parent company was apparently content to continue the work in question without any formal statement of an obligation on the part of the licensees to pay for it. Such a formal statement is, of course, wholly unnecessary in view of the self-interest of the American Co. in protecting its licensees and itself in the enjoyment of the profit opportunity offered by the telephone field.

The American Co.'s position has been that services to licensees were incorporated into the license contract by the "practices of the parties."⁹⁹ In rate cases prior to 1918, of which the first was about 10 years before that date, it was assumed by the American Co. that the services were a part of the consideration for which the associated telephone companies paid the license fee. But in view of its dominating position with reference to the members of the Bell System, based principally upon stock control, the undefined relationship constituted by "practices of the parties" meant that the extent of the work the American Co. would perform would depend largely upon its own self-interest arising from its tremendous stake in the system,¹ which was represented by stock owned in the members thereof, and advances made to them. This latter proposition was well developed

⁹⁵ See exhibit 130, pp. 79-80; exhibit 1951-A, pp. 16-17, exhibit 50, pp. 35-40.

⁹⁶ See exhibit 1360-A, pp. 202-222. See *supra*, ch. 5, and *infra*, chs. 7 and 8.

⁹⁷ See exhibit 1951-A, pp. 16-19.

⁹⁸ Reference was made above to the cryptic allusion to "services" in the Southwestern Telegraph & Telephone Co.'s memorandum contract of 1907, and the express agreement by the licensor in the case of some licensees to handle at its own expense all cases of patent infringements relating to Bell patents. See p. 150 *supra*.

⁹⁹ See exhibit No. 130, pp. 64-65.

¹ See exhibit No. 130, p. 66, n. 130; and exhibit 1950-A, pp. 79-80. Compare *id.*, pp. 135-136. See *infra* ch. 7.

by the American Co. itself in the later years (1907-12) of the litigation growing out of the contract with Western Union Telegraph Co. There, the telephone company contended that the work done by it for the licensees was not only performed, but was also carried on free of any charge to the licensees, because of the stock it owned in those companies.²

The introduction of the "restated" license contracts in 1918-20 and 1930-31, with their provisions as to services, did not alter substantially the situation so far as the ability of the American Co. to fix the character of the work it would do under the license contract was concerned. These redrafts were couched in such general terms that, in effect, the parent company was, and is, left free to exercise its discretion in the making of its decisions as to the services it will undertake.³

The second main line of inquiry into the American Co.'s current position was concerned with the expenses incurred by that company in holding the securities. Since the acquisition and holding of the stock of the licensees are viewed by the American Co.'s representatives as related to the license contract, the expenses connected with the \$2,000,000,000 or so of stock are identified by these representatives as license contract costs.⁴ But the terms of the license contract have never obligated the American Co. "to lend money to the licensees, to accept their stocks in settlement of advances, or to buy the stocks or retain them under any conditions."⁵ The history of the stock acquisitions, from their beginnings in the form of the so-called franchise stock, taken when permanent licenses were granted, reveals that these were often prompted by the natural desire to control a growing and prosperous system and, at the least, to enjoy the returns incident to ownership of stock in a generally profitable business. Thus, for example, such acquisitions of stock of licensees as those through the wholly owned corporation, the Atlantic & Pacific Telephone & Telegraph Co., could hardly be regarded as license contract transactions.⁶

The fact that the American Co. holds stock of the licensees and issues its own securities to the public to raise funds for the system, naturally results in duplication of expenses insofar as financing through stock is concerned. Company representatives have contended, however, that the American Co. stock is in the hands of the public as the result of centralized financing for the licensees under the license contract, and that, therefore, the expenses incident to American Co. stock are properly to be included as license contract costs.⁷ The company's position as to the expenses of holding the stock of licensees has been described heretofore.

Heiss admitted the existence of duplication of expenses when he testified before this Commission.⁸ He declared, however, that he

¹ See exhibit 130, pp. 23-26, 65-80; and exhibit 1950-A, pp. 78-84. When American Co. witnesses (Ray, Heiss, Crunden, Green) were questioned in the investigation before the Federal Communications Commission, April 20-22, 1936, no information as to the *Western Union* case was elicited because of the unfamiliarity of the witnesses with the case. Subsequent correspondence between John H. Ray, of the American Co., and the Commission, relative to this case, included in Special Investigation Docket No. 1 as exhibits No. 126 A, B, and C, drew the comment from Ray, in his last reply: "The 2 letters indicate that your people and I differ as to the conclusions to be drawn from the old *Western Union* case."

² See exhibit 1950-A, at pp. 135-136.

³ See exhibit 1950-A, pp. 217-220.

⁴ See exhibit 131, pp. 54-55; testimony of Heiss, Transcript of Record, Federal Communications Commission Special Investigation, docket 1, pp. 1206-1222.

⁵ See exhibit 2093, pp. 17-43; exhibit 250, pp. 66-68.

⁶ See e. g., exhibit 1950-A, pp. 216-217.

⁸ See Transcript of Record, Federal Communications Commission, Special Investigation, docket 1, pp. 1115-1116.

had always considered the costs of holding the securities of the licensees as included in the over-all nonlicense deduction. An examination of the basis for that deduction does not reveal wherein he finds grounds for this statement. So far as can be determined from descriptions by American Co. representatives of the nonlicense deductions for the various departments, and from analyses of the license and nonlicense allocations, no deduction is made to cover the expenses in question.⁹ As stated previously, the nonlicense deductions appear to be restricted to work of a nontelephone character and work done for nonlicensed companies.

Allocations of costs of the various departments of the general department.—The particular allocations of the costs of each department of the general department will not be discussed here, department by department.¹⁰ The present discussion is directed rather to an examination of certain activities of the general department, than to the review of the functions of the component departments of the general department. The subsequent analysis of particular allocations of expenses as license contract costs is concerned with the research and development work, and patent and money-lending activities of the American Co.'s general department.

*Allocation of research and development costs of the American Co.*¹¹—The extent of these costs has already been indicated.¹² For 1936, they totaled nearly \$9,800,000, before deduction of "nonlicense" expenses.¹³ The provisions in the license contract relating to the research and development activities of the American Co. are in very general terms. The matter is thus placed largely within the discretion and judgment of those making the decisions relative to the work in question. In this connection, it is pertinent to observe that the associated companies have "no direct voice" in the determination of the problems to be studied by the Bell Laboratories.¹⁴ They have a "voice" in the establishment of research and development projects only in the sense that "a large part of the research and development cases which arise out of the current necessities of operation, come either directly to the Laboratories, or more frequently indirectly to the Laboratories through the department of operation and engineering from the associated companies."¹⁵

One fairly recent and large-scale example of the exercise of this discretion vested in the persons in charge of the research and development work for the Bell System is found in the treatment of certain cases originally authorized by Western Electric, and thus billable to it. In 1932, after Western Electric's sales had been diminishing for several years at a rapid rate, a general reclassification of cases was made by the Laboratories, resulting in the transfer of billings to the American

⁹ See exhibit 1950-A, pp. 197-198, 215-216.

¹⁰ For treatment of the departmental allocations, see exhibit 1950-A, pp. 193-209 (all departments except development and research and operation and engineering); exhibit 1951-B, pp. 29-44, 60-68.

¹¹ See infra, chs. 7, 8, and 9, and sources cited supra, p. 160, n. 49, for further analysis of these expenses. Ch. 7 presents and analyzes the American Co.'s research objectives, indicating the degree to which research expenses are incurred for the purpose of protecting its investment interests from the effects of competition by other forms of communication, while this chapter's analysis of license contract costs (in which research expenses are included) comprehends all benefits to the American Co.'s investment interests.

¹² Supra, p. 160.

¹³ The nonlicense deduction was described above. It will not be discussed here, but an analysis thereof will be found in exhibit 1951-B, pp. 61-89.

¹⁴ See testimony of Dr. Jewett, vice president of the American Co., and president of Bell Laboratories, Transcript of Record, Federal Communications Commission, Special Investigation, Docket 1, pp. 2670-2672.

¹⁵ Id., at p. 2671, Dr. Jewett pointed out that the "voice" of the companies in the sense stated "never, so far as I know, or almost never, runs to the fundamental long-range things, because they are not in any position, in general, to do that." Ibid.

Co. in the amount of \$3,347,079, with corresponding relief to Western Electric. A study of this reclassification by a member of the special investigation staff resulted in the conclusion that the American Co. consequently paid Laboratories for work chargeable to Western.¹⁶

The reasons for this shift in billing were, according to Dr. Jewett, as follows:

* * * The reasons which lead to the shift in billing from the Western in this case to the American Co. were either that there was change in the emphasis in character of the work which tended to make it of a more fundamental character and so in the class normally billable to the American Co. or because the work in many cases was of a kind which the American Co. felt could not be stopped or diminished in the interest of the associated companies at a time when the Western Electric Co.'s business was at such a low ebb that they felt they could not carry it in the normal fashion.¹⁷

*Royalties from patents.*¹⁸—As was pointed out above, the research and development work performed for the American Co., the expense of which is almost entirely allocated as a license-contract cost, has resulted in the acquisition of certain patents. Although royalties have been received by the American Co. from non-Bell and nontelephone sources because of these patents, no deduction from license-contract development and research costs has been made therefor in the American Co.'s showings of license costs.¹⁹ Comptroller Heiss has expressed the opinion that "if you credit about one-third of the royalties received by the American Co. against your license-contract costs you will be doing the fair thing."²⁰ but even this deduction has not been incorporated into the showings of license-contract costs.

Money-lending activities of the general department.—These activities were mentioned above in connection with the discussion of the stock-holdings of the American Co. It was there pointed out that the license-contract provisions for the furnishing by the licensor of advice and assistance to the licensees in their financing and securing of funds, neither obligate the American Co. to lend money to the licensee companies nor to take their stock. Yet the extension of financial aid to the licensees through the making of loans,²¹ and the liquidation of the advances by the payment of stock,²² have assumed large proportions.

The two financial costs which, according to the American Co., it incurs over and above the interest received on advances in rendering financial aid to the licensees under the license contract are cost of holding funds available and cost of temporary financing. In other words, the company claims that the present interest rate of 5 percent (4.9 percent net) is insufficient to cover its alleged costs of conducting its money-lending activities under the license contract. The American Co. thus asserts that these two financial surcharges should be included in its license-contract costs. The inclusion of these "money costs" in the license-service costs is equivalent to increasing the interest rate on advances, 6 percent gross or 5.88 percent net from 1923 to 1935, to an average effective interest rate of 7.3 percent.²³

¹⁶ See testimony of an assistant chief accountant of the Federal Communications Commission, Transcript of Record, Federal Communications Commission, Special Investigation, Docket 1, p. 2587; and exhibit 243, pp. 167-168. The conclusion was also reached that the American Co. paid for certain research and development work chargeable to E. R. P. I. See Transcript of Record, Federal Communications Commission, Special Investigation, Docket 1, p. 2586; and exhibit 243, pp. 194-196.

¹⁷ Transcript of Record, Federal Communications Commission, Special Investigation, Docket 1, at p. 2732. See also id., pp. 2641-2643, 2666 ff.; and exhibit 243-A, at pp. 8-18.

¹⁸ For further treatment of the American Co.'s patent policies and practices, see *infra*, ch. 8.

¹⁹ See exhibit 1951-B, pp. 78-88.

²⁰ Id., p. 85; see also id., p. 83.

²¹ See exhibit 1359, pp. 21-28.

²² Id., pp. 35-39.

²³ Id., p. 21.

A member of the staff concluded, as a result of his investigation, that "an interest rate of not more than 5 percent per annum on the advances to the associated companies, over a long period of years, would have been adequate; and that on the basis of current interest levels, 4 percent would be ample."²⁴ Added significance is, of course, given this conclusion by the recent action of the American Co. in lowering the interest rate to 5 percent (4.9 percent net) as of October 1, 1936. Despite these facts, however, the two financial costs still remain in the company's presentations of total license-contract costs.²⁵

There are several other significant aspects of the money-lending activities of the American Co. Regardless of whether the American Co. intended to obtain stock when it advanced funds to the associated telephone companies, the fact is that a substantial portion of its holdings of stock of licensees was thereby acquired.²⁶ Loans became one of the most important mediums by which the American Co. maintained and enlarged its stock investment in the licensee companies. Because of its stock control,²⁷ the American Co. is also able to decide whether it will continue loans or convert into stock, so that it may weigh the rate of return on advances as against that on stock. It may then choose to supply capital to the operating companies either through loans or stock purchases, depending upon which course is more advantageous to it.

Apportionment of total license-contract costs to long lines, the licensee companies, or local areas.—It has been observed, in connection with the prior discussion of this matter, that the "costs" shown by the American Co. as attributable to long lines, or any particular licensee company or local area, are merely the result of an apportionment, on the basis of certain selected factors, of the total license contract costs of the American Co. The company declares that it is impossible to determine the actual cost of performing the license contract for any one licensee company or local area. It thus becomes (from the company's standpoint) a matter of the judgment of those persons responsible for selecting the bases to be used in the apportionments.

One of the most important problems arising in connection with the apportionment of license contract costs as between long lines, on the one hand, and the associated companies, on the other, is the disposition of research and development costs. This is the result not only of the large sum involved, but also of the uncertainties naturally pervading research and development work. Use of the American Co.'s present method of apportionment, which allocates to long lines and the licensees on the basis of relative plant in service,²⁸ results in the assignment of about 10 percent of the costs to long lines and 90 percent to the licensee companies. It appears from expressions of opinion by Dr. Jewett, president of Bell Laboratories, and a vice president of the American Co., that these allocations, which are premised largely upon the judgment of research officials as to probable future use of the work in question, were but "guesses."²⁹ The fact

²⁴ Id., pp. 203-204.

²⁵ Analysis of the method whereby the American Co. derives these financial "costs" is presented, ch. 15, *infra*.

²⁶ See exhibit 1350, p. 39.

²⁷ See testimony of Helms, transcript of record, Federal Communications Commission, special investigation, docket 1, p. 1186; and exhibit 2096-C, pp. 72-73.

²⁸ See exhibit 243-A, pp. 21 ff.

²⁹ See testimony of Dr. Jewett, transcript of record, Federal Communications Commission, special investigation, docket 1, pp. 2917-2919; and exhibit 1951-B, appendix E-4, sheets 9-11. Compare memorandum of E. H. Colpitts, of the company's development and research department, appendix E-4, sheets 1-7.

that transmission improvements have been in the past generally applied first to the longer circuits, that is, long lines circuits and the longer toll circuits of the associated companies, and then to shorter and shorter distances, has been taken as the basis³⁰ for apportioning to the associated companies all but about 10 percent of the license costs involved in current research and development work. But many of the results of the research and development work may be used preponderantly or even solely in long distance and toll business at the time of the allocations.³¹ And, as was pointed out, company officials are more or less speculating in their allocations here because of their uncertainty as to when these results will be applied in the plants of the associated companies, especially insofar as the latter's exchange operations are concerned.

The Significance of the License Contract.

A consideration of the whole field of activity of the license contract brings to the fore certain significant aspects of that contract, and the relations between the parent company and the licensees, and those between the Bell System and the public engendered thereby.

Matters in which license contract is primarily of historical significance.—In the first place, the idea of exploiting the telephones through the use of local individuals or companies, to whom the instruments were leased and licensed, enabled the licensor to tap sources of capital in the particular locality. The licensing arrangements gave a local or native aspect to the business. In addition, the license contract enabled the licensor to accomplish the desired development of the telephone business through making the telephone instruments publicly available, without losing control of the very important instruments. Finally, the license contract played an important part in the licensor's acquisition of stock control of the licensees. It was the licensees' necessity of obtaining a permanent license that led to their grants of "franchise" stock to the licensor, which became the nuclei for the subsequent holdings of the latter. And the existence of the license contract paved the way for the financing which led to many subsequent acquisitions of stock of the operating companies.

License-contract payment as operating expense of the licensees and long lines.—Obviously the most immediate significance of the "license contract" fee paid by the licensee companies and long lines to the American Co.'s general department is the fact that it is included in operating expenses by them. If it is a proper item of expense, it is supposed to be covered by the rates charged the public. This means that in the last analysis the subscribers who constitute the source of nearly all the income of the operating units, pay almost all the license fee.

In this connection it should be noted that the public interest is not confined to the 1½ percent license fee paid, but extends to the validity of the cost showings made by the American Co. Not only are these showings material with respect to the issue of the validity of the license fee since the Illinois Bell opinion of 1930, but it is these statements of costs that indicate what the parent company claims it should rightfully recover from the licensees.

³⁰ See exhibit 243-A, pp. 22 ff.

³¹ See exhibit 243, pp. 11-12; exhibit 1951-B, pp. 118-135; and testimony of Dr. Jewett, transcript of record Federal Communications Commission, special investigation, docket 1, pp. 2589-2926.

The effect of the "license-contract" payments made by the licensee companies and long lines department for the year 1936 upon their operating expenses is illustrated by schedule 2 of appendix 10. This shows the effect of these payments on the ratio of net operating income to average undepreciated investment in telephone plant of licensee companies and the long lines department. Reference to that schedule discloses that in the year 1936, the presence of the license contract payments in the operating expenses of those operating units reduced that ratio by 0.35 of 1 percent, on the average. Under the present method of computing the license contract payment to be made by the licensee companies, the payment varies with variations in the gross telephone revenues of the companies.

Source of revenue to the licensor company.—Over the years, many millions of dollars came to the licensor company from the operating telephone companies in the form of license-contract payments. Before dividends on stockholdings in licensees and Western Electric, and earnings from the long lines department, assumed such large proportions, the license payments were a very important source of revenue. But even apart from the diminution of its importance by comparison, this item of income has shrunk in stature as the result of the changes caused by the sale of the instruments in 1927, and the subsequent reduction in the basis for payment of the license fee.

For the year 1936, the American Co. received \$13,450,002, in license fees from the licensee companies, and \$1,762,160³² from the long lines department for work allegedly performed for it, or a total of \$15,212,162 in income attributable to the "license contract" provisions. The significance to the American Co. of this item of income in 1936 with relation to the rate of return on the average stockholders' equity of that company is shown on table 38. The table shows that the rate of return on average stockholders' equity in 1936 was 7.36 percent, and that the license-contract receipts constituted 0.64 of 1 percent of this rate.

TABLE 38.—*Relation of license contract revenues to rate of return on average stockholders' equity of American Telephone & Telegraph Co., year ended Dec. 31, 1936*

Item	Particulars	Amount
1	Average stockholders' equity: 1	
2	Stock issued and outstanding (par value, \$100 per share, of common stock outstanding).....	\$1,867,568,700
3	Premiums on capital stock (amount received in excess of par value).....	269,319,528
4	Surplus.....	236,818,138
5	Total.....	2,373,706,366
6	Net income (before dividend payments).....	174,826,414
7	License contract revenues:	
8	From licensee companies.....	13,450,002
9	From long lines department.....	1,762,160
10	Total.....	15,212,162
11	Net income, excluding license contract revenues (5-8).....	159,614,252
12		Percent
13	Rate of return on stockholders' equity, including license contract revenues (5÷4).....	7.36
14	Rate of return on stockholders' equity, excluding license contract revenues (9÷4).....	6.72
15	Portion of rate of return constituted by license contract revenues (10-11).....	.64

1 Figures derived from annual report of the American Telephone & Telegraph Co. for 1936, at pp. 25, 26.

³² \$66,560 of this sum was not billed long lines until July 1937. The amount billed long lines included the 1½ percent payment of Transpacific Communication Co., amounting to \$529 in 1936.

Effect of the license-contract charge on public relations of the Bell System.—The license-contract payment has been the subject of controversy—"eternal criticism"³⁸—almost from the beginning of attempts to regulate Bell System operating companies.

The license-contract relations have been publicly suspect, and the object of a great deal of public attention as an issue in rate controversies. Such attention has probably been disproportionate in amount when the relative monetary importance of this issue is considered as against that of other issues, which might have suffered neglect in whole or in part because of the time and effort public bodies have felt obliged to expend upon the license-contract relationship.

The license-contract payment has not only been accounted for in operating expense by the licensees, but it also constitutes a continuing direct payment by the licensees to the parent company. The combination of these two factors and a third—lack of independent knowledge of the license-contract relations by the public and its regulatory agencies; that is, a lack of knowledge other than such as has been supplied by the Bell companies—afford an explanation of the perennial character of the license-contract issue.

Summary.

The license contract originated as an agreement between the parent Bell organization and individuals, partnerships, or companies for the lease of instruments and appliances covered by Bell patents and the right to use them. The original agreement has been modified from time to time. In its present form the license contract recites the mutual obligations of licensor and licensee and provides for the payment of a license fee by the licensee amounting to 1½ percent of its gross telephone earnings.

Payments made to the American Telephone & Telegraph Co., under the terms of the license contract, have been claimed by the associated Bell companies as operating expenses appropriate for consideration in determining revenue requirements in rate cases. In *Smith v. Illinois Bell Telephone Co.* (282 U. S. 133) the United States Supreme Court ruled that the cost to the American Co. of rendering services covered by the license-contract payments and not the value of the services to the associated companies is the correct measure of the reasonableness of the amounts involved. For the purpose of determining the reasonableness of such costs the Court has taken specific notice of the absence of arms-length bargaining between the parties to the license contract.

The expenditures which are claimed by the Bell companies to be properly chargeable to the license-contract costs include substantially all of the expenses of the following departments of the American Telephone & Telegraph Co.: Development and research; operation and engineering; operation—general; personnel; information; legal; comptroller; treasurer; secretary; general service bureau; and administration. The services alleged to be furnished as consideration for the license-contract payments include:

Management of the assets of the American Telephone & Telegraph Co., consisting largely of stock of the associated companies and loans to them.

Research and development work, consisting largely of work performed for the American Co. by the Bell Telephone Laboratories, Inc.

³⁸ See testimony of Comptroller Heiss of the American Co., transcript of record, Federal Communications Commission, special investigation, Docket 1, p. 1227.

Operating and engineering advice on all matters pertaining to construction and operation of the properties.

Patent services involved in obtaining patents and protecting the associated companies against infringement claims.

Financial services, including holding funds available to meet requirements of licensees.

The American Telephone & Telegraph Co., in its proof of the cost of license-contract services presented in rate cases on the basis of the standards provided by the *Smith v. Illinois Bell Telephone Co.* opinion, has not made a separation between the benefits accruing to the American Co. itself and those accruing to the various associated companies from the research activities designed to protect the investment and from other types of services furnished by the American Co. The method now used by the American Co. for developing and showing license-contract costs involves a nonlicense deduction for expenses, regarded as incurred for work of a nontelephonic character and work done directly or indirectly for nontelephonic companies, such as Electrical Research Products, Inc. The general department of the American Telephone & Telegraph Co. does not keep records of its expenses in such a way as to segregate currently or permit the segregation of the costs incurred in performing telephonic license-contract services from those arising from holding-company activities.

Any consideration of payments made or costs incurred by the American Co. in connection with research activities under the telephonic-license contract requires concurrent consideration of the effects of such research activities on the risks involved in the business. To the extent that development and research work is directed to providing protection for the investment in the telephone business, the costs should be borne by the parent company, or if such costs are borne by the associated companies through the license-contract fee, a corresponding reduction in the fair rate of return with corresponding reduction of net-earning requirements of the licensees will probably be justified, since the protection thus afforded would seem to be a benefit to the investor rather than to the subscriber.

CHAPTER 7

RESEARCH

Bell System technical policies and practices are presented under two titles: Research (ch. 7) and Engineering and Standardization (ch. 9). This distinction between research policy and engineering and standardization policy reflects a segregation of departmental activities, which was made in the years immediately following the American Co.'s management reorganization of 1907. Before that time the company's technical objectives and practices were less well defined, and are referred to by the more general phrase "technical activities." Those research activities which constitute an outstanding characteristic of the Bell System's present technical effort received a definite impetus following the change in management of the company under the influence of a group of investment bankers.¹ This expansion of company policies concerned principally work termed by the company "fundamental research" in the field of physics, chemistry, and the other basic sciences, for ultimate application to the telephone industry. For the purpose of presentation of facts on the company's technical activities in these two chapters, "research" will be defined and distinguished from "engineering and standardization."²

Each technical step required in the process of evolution and commercial adaptation of a scientific discovery is not sharply distinct, but merges gradually into each succeeding step as the activity moves from original discovery or evolution, out of research, into engineering development, and on to eventual standardization for mass production and widespread use in the telephone plant. Actual practices and policies of the American Co. afford the only practical basis upon which to define these fields of corporate effort for the purpose of analysis of company policy in the several fields. The expenses of the Bell Telephone Laboratories, including and reflecting both research and engineering activities, are apportioned between the American Co. and Western on the basis of (1) fundamental research and development expenses, which are charged to the former, and (2) the expenses of those activities which concern design and engineering involved in manufacture, which are charged to the latter. The second class of expenses reflects the effort required to adapt, for commercial purposes, a research laboratory model or method which may be only one of several alternative forms or methods evolved by the research effort.³

¹ For detailed presentation of this 1907 change in company management, see ch. 4.

² There are numerous variations in the technical definitions of these terms, as well as in the layman's conception of their meaning. The definitions given here are adopted only for clarity in defining the several fields of corporate activity into which the American Co.'s policies and practices must be divided for analysis of their respective objectives and results.

³ A classification cannot be made rigidly upon the basis of the company's allocation of expense in this manner, for it appears that some work, which may be considered as "engineering" in character, is charged to the American Co., while some work of a "research" nature is charged to Western. However, the company's general classification must be accepted for the purpose of analysis even though some qualification is required, in order that the definitions may be related directly to the company's actual practices, especially in its accounting classifications. These definitions, necessarily adopted to afford an intelligent discussion of the company's policies and practices thereto, do not imply that other and more concise definitions may not be needed in the future; in fact, the company's rather resilient definition of "fundamental research," as a basis for dividing the Laboratories' expenses between the American Co. and Western, appears to be somewhat in the nature of a convenient and easily defended explanation of expense classifications which may have been determined upon the basis of other and less indefinite criteria. A more detailed treatment of this problem is contained in exhibit 1951-B, pp. 46-50.

Before defining standardization, a second policy of the company may be noted as having a bearing upon the company's distinction between research policy and engineering and standardization policy. As set forth in detail in chapter 8 on Patents, it is a definite company policy to carry research activities to the point where they will "support" patent applications on all the available and known alternative methods of accomplishing a specific result. Obviously, it is not a company policy to develop all these alternative forms to the point where they may be exploited commercially through standardization, manufacture, and introduction in large quantities into the extensive telephone plant. This aspect of patent policy affords a further method of distinguishing between these two fields of activity, for research activity is shown to have certain objectives which are served as soon as patents have been obtained on all alternative methods. It is at this point in the technical process that a selection must be made from among the several available forms evolved in the research laboratory, whereupon only the form thus selected is exploited commercially through engineering development and standardization. This chapter on research presents the American Co.'s activities, objectives, and policy in the former field, while the chapter on engineering and standardization presents those objectives and policy inherent in the company's practices after the alternative form has been selected, and during the time it is being designed, adapted, and standardized for widespread Bell System use.

"Standardization" generally implies the production of physical assemblies consisting of parts which are completely interchangeable, thus permitting mass production methods and economies both in original manufacturing cost and in the subsequent cost of operation and maintenance. As applied to the Bell System, standardization has an added aspect due to the fact that the product sold is a uniform service rather than a uniform physical product. For that reason Bell System standardization includes not only standardization of the parts used in the telephone plant but also standardization of the method of its operation, for both are required to deliver a standardized service with the economies inherent in the mass-production methods of those industries marketing a physical product. Standardization of physical parts in the Bell System is an activity inherent to some degree in research and development, although probably more predominantly concerned with engineering. Standardization of method is also involved both in research and engineering, but is especially evident in the "operation and engineering" department of the American Co., which controls and directs the methods of maintenance and operation of the telephone plant of the several associated companies.

History of Technical Activities (1875-1907).⁴

The following description of technical activities over the period 1875 to 1907 is divided into periods reflecting successive changes in the American Co.'s organization of its technical personnel.

Technical activities (1875-81).—During this early period the experimental, engineering, and technical activities of those connected with the Bell telephone invention were more or less informal, and there were no technical departments organized with clearly defined functions

⁴ For a more detailed development of the history and conduct of Bell System technical activities, as presented in this chapter, see exhibit 1951-A, pp. 1-100.

and objectives. Early technical work was done by Thomas A. Watson, along with George L. Anders, and E. Berliner, until 1880. At that time W. W. Jacques came into the organization in a supervisory and administrative status. During this period, and before the formal organization of experimental and engineering activities in 1881, the technical efforts of the Bell group were largely concerned with the development of the telephone into a commercially useful instrument. However, definite general objectives of company policy were established by the Bell group during this period and provided controlling motives for the Bell Co.'s technical, as well as for its patent activities and all other major fields of corporate effort.

The immediate objective of the Bell group at this time was to "occupy the field," an especially important objective in its competition with Western Union over dominance of the field of telephony, prior to the execution of the agreement late in 1879.⁶ After this objective was attained it was protected through the Bell Co.'s activities in attempting to buy or control important patents and, as Vail stated it, of surrounding itself with everything that would afford protection, including knowledge of the business, as well as patent control of all the kinds of auxiliary apparatus necessary for development of the business. As soon as telephone service required district exchange or switching mechanisms it was found that this would require "a thousand and one" small patents and inventions, and the Bell Co. definitely wanted to control and get possession of those patents or inventions. This could be accomplished either through acquiring patents of others or by carrying on the necessary experimental work on which to obtain its own patents.⁷ During this early period more attention and effort were given by the Bell Co. to acquiring the patents of others, especially those of Western Union and Francis Blake, than to formal organization of a technical department of its own. According to Vail's statement the objective was to protect the field through control of these many small patents. This established an early motive in technical and patent activities for control purposes, an objective which apparently was implemented more by the company's patent acquisition efforts than by aggressive technical activity on its own account.⁸ After the Western Union agreement had established the Bell interests as dominant in the telephone field,⁹ technical activity as an independent approach to this general objective was instituted on a more formal basis.

"*Electrical department*" (1881-84).—In 1881, the first formal organization of technical activity became apparent under the title of the electrical department, which included experimental work under Jacques, the patent activities under Lockwood, and general electrical work under Watson and Berliner. This electrical department reflected a realignment of the Bell group's activities after the Western Union settlement of 1879, and its activities were directly under super-

⁶ This early Bell competition with the Western Union is described in greater detail in ch. 5.

⁷ See *Western Union Telegraph Company v. American Bell Telephone Company*, 187 Fed. 425, "Evidence for Defendant," vol. II, pp. 1542 and 1543, wherein Vail, in testifying (in 1907) on the company's 1879 objectives, stated, in part: "One of the first things that was fully developed in our minds was the necessity of occupying the field; * * *. Just as soon as we started into the district exchange system we found out that it would develop a thousand and one little patents and inventions with which to do the business which was necessary, and that is what we wanted to control and get possession of. So from the very commencement we had our experimental department, so-called—either experimental or engineering, as you choose—whose business it was to study the patents, study the development and study these devices that either were originated by our own people or came in to us from the outside."

⁸ For detailed treatment of the company patent acquisition policies, see ch. 8.

⁹ The Bell Co.'s early competition with Western Union, resulting in the Western Union agreement of 1879, is described in ch. 5.

vision of the general manager, Theodore N. Vail. Inclusion of the patent work as a part of the engineering department gradually gave way to a more or less independent position of Lockwood on patent activities, until the next reorganization in 1884 found patent work distinct and separate from the remainder of the engineering and experimental activities.

The functions of this early electrical department fell largely into three classifications:

(1) Inspection of the process and product of those manufacturers who were supplying the telephone instruments which the Bell Co. leased to its licensees.

(2) Survey of the field of patents to determine upon those patents desirable to purchase from outsiders.

(3) Experimental work, apparently divided into two categories: (a) The work under Jacques of tests and measurement, largely upon cable and pole lines; and (b) the work under Berliner, consisting largely of general experimental work on transmitters and receivers.

This early organization of Bell System technical activities was not concerned primarily with, or organized for, giving field service or advice to the licensee organizations, but was more nearly controlled by the desire to develop or buy patents which would perpetuate its patent control in the field of telephony, and make available a type of telephone service which could be exploited at a profit. It was during this period that the Bell Co. acquired a large interest in the Western Electric Co. for the stated purpose, among others, of reinforcing its ability to control the quality and type of telephone apparatus available to the industry and to avoid the production of a wide variety of types of apparatus for similar purposes. This initiated the Bell System's first movement toward standardization of telephone equipment and apparatus, through influence or control over the manufacturing organization. A further close connection between this purchase and the basic objective of the technical activities may be seen when it is noted that the manufacturing activity itself was a field offering large opportunity for effecting improvements in the apparatus being manufactured. Control over the manufacturing organization and process thus gave control over this independent source of further technical development.

Mechanical department (1884-94).—The period 1884 to 1894 is the period in which the Bell Co.'s technical activities began to reflect the company's change in character (beginning in 1881) from that of an organization merely renting or leasing telephone instruments to that of an organization also owning or controlling the companies which operated the leased instruments. It is during this period that the company's technical activities first reflected any considerable effort to lend technical advice and aid to the operating companies. The changed character of the licensor company's association with the subsidiary operating companies is a logical explanation for the introduction of this new effort in technical activities. However, during this period as well as during the two prior periods the controlling objective of the company's business policy, insofar as it related to technical activities, apparently was the desire to use technical develop-

ment in the field as a basis for continuing control over, and profitable development of, the telephone business.⁹

The organization for engineering activities which was set up in 1881 was changed again in 1884, with a corresponding change in the department's name. The patent activities were separated completely from the electrical department and thenceforth continued as a separate organization and separate function under Lockwood. What had been the principal remaining technical functions of the electrical department were assumed by a department which came to be known as the mechanical department. This new department assumed the following functions:

1. Examination, experimental testing, and preparation of reports on submitted inventions.

2. Adopting inventions and designing apparatus for commercial application in the wire telephone plant.

3. Tests of materials and supplies.

The first duty was given a position of primary importance, thus continuing the type of activity which had been emphasized in 1881 in the duties of the original technical organization. In this respect there was no fundamental change in the company's emphasis in or limitation upon its technical activities.

The latter part of this period witnessed a significant conclusion on the part of Hammond V. Hayes (who became head of the department in 1886) as to his method of dealing with what later came to be termed fundamental research. Up to this time the technical activity largely had been concerned with new designs of existing instruments and supervision of the methods of telephone manufacture. Hayes recognized the existence of a further field having desirable objectives which included the devising of new methods of transmitting speech, but he apparently believed the burdens of the first two types of technical activities were too great to allow him to develop this additional field of effort, which he disposed of in this fashion:¹⁰

I have determined for the future to abandon this portion of the work of this department, devoting all our attention to practical development of instruments and apparatus. I think the theoretical work can be accomplished quite as well and more economically by collaboration with the students of the Institute of Technology and probably of Harvard College.

Engineering department (1894-1907).—Expiration of the basic Bell patents in 1893 and 1894 had an understandable effect upon technical objectives and activities. An indication of this is given in the subject of metallic (two-wire) circuits as against the practice then predominant of using a single telephone wire, with the ground serving as a part of the electrical circuit. A question apparently arose at this time as to the necessity of requiring all-metallic (two-wire) circuits. Hayes said in this connection:¹¹

My answer would be * * * that metallic circuits should be used even where the service is to be entirely local, for the reasons,

⁹ The early origin of this controlling objective was clearly stated in the argument of counsel for the Bell Co. in the *Western Union case*, the relevant parts of which are quoted on p. 206, *infra*. These frank statements of Bell counsel serve to orient the company's technical and patent activities both with respect to each other and to the controlling objective of the company's entire corporate effort; that is, that the successful pursuit of profits required a control not only over the telephone patent itself, but also over the auxiliary equipment required for commercial exploitation of the telephone. This control of auxiliary equipment, as well as of refinements and improvements in the original telephone instruments, could be obtained by two methods: either through purchase of patents developed independently, or through the development of patentable ideas by its own technical organization.

¹⁰ Annual report from Hammond V. Hayes to President Hudson, dated March 7, 1892, pp. 2, 3.

¹¹ Letter from Hammond V. Hayes to President Hudson, dated March 17, 1891.

First, service. I think that we must use better instruments as soon as competition becomes active. We have good instruments, and, if they are used the trouble from cross-talk on grounded circuits would be great.

At the beginning of this period the mechanical department ceased functioning as a wholly independent unit and was relegated to the status of a division in an engineering department which consisted of the mechanical division and the engineering division. The latter was a new technical unit which had its origin in 1890 as an engineering department, consisting of a chief engineer and one assistant. This unit, which had grown to a total of seven members by 1893, conducted miscellaneous engineering work largely in the nature of field work and study, requiring many visits to the telephone exchanges in operation. For example, before it was amalgamated with the mechanical department it had made a study, jointly with the latter department, of electrical interference caused by the electrical street railway systems which at that time were increasing rapidly in number and scope of operation. Much work of this character was also being carried on by the associated companies which now obtained the cooperation and support of the American Co. With the approaching threat of open competition this early effort apparently reflected the company's increasing desire to become acquainted with the operating problems of its licensee operating companies, and to aid them in maintaining their competitive position in the industry and in reducing costs.

Coincident with the beginning of telephone competition there was an increase in the personnel of the technical group about the time the basic Bell patents expired. By the end of 1894, the engineering division had doubled its staff from 7 to 14 members while the mechanical division contained a personnel of 46. The next year ended with 19 men in the engineering division and 60 in the mechanical division. The former remained about the same in size for some years, but the latter increased to 72 in 1898 and to 125 in 1901. By 1902 the total number of technical workers was 203, an increase of 238 percent over the technical staff employed late in 1894, at the beginning of the period of competition.

During this period of competition from other companies within the telephone field, continued importance was attached to the development of long-distance telephony which received, either directly or indirectly, a large share of attention of the technical forces. The technical effort in this direction was a continuing and important characteristic of the period in which effective competition was offered by independent telephone companies. During this period President Fish of the American Co. stated that the company's long-distance lines, regarded as the "nerves" of the whole system, were considered extremely important to the company and constituted a protection against competition from local independent telephone companies.¹²

Because fundamental changes were made in the company's policies in 1907, at the time management control of the American Co. was changed under the influence of investment bankers, it is helpful to review the status of the company's policy on technical activities as it existed just prior to the change. Prior to 1907 little attention had been given to what came to be known later as "fundamental research." Acquisitions of controlling patents were made through the patent

¹² For a more detailed treatment of the company's long-lines policy and this statement by President Fish, see ch. 12.

department from sources external to the Bell System. The policy rather was for technical activities to extend long-distance service and to aid in the fight against competition; to design and improve apparatus in its more minor details; and in general to attempt to meet all competitive offers of telephone service of improved quality, at lower cost and in greatly increased quantity.¹³

Change in Technical Activities After the 1907 Management Reorganization.

Changes in the company's technical activities may be traced directly to the abrupt introduction of a new management control over the company in April 1907, when investment bankers came into prominence in the company's affairs.¹⁴ On July 1, 1907, Theodore N. Vail, the new president installed by the bankers, replaced the company's chief executive of technical activities, Hammond V. Hayes, by John J. Carty, an old associate of Vail during the latter's previous connection with the company prior to 1887. Hayes subsequently was released after Carty had assumed aggressive supervision of all technical activities. The technical work and staff immediately were moved from Boston to New York and changes in the personnel were given prompt consideration. The influence of a new management, acting under the pressure of current adverse economic conditions, was reflected almost immediately in the company's technical activities in several ways: First, in a prompt reduction in the engineering personnel and expenditure; second, in an emerging emphasis upon "standardization" as a method of decreasing the cost and increasing the net return derived from the sale of a uniform and rigidly standardized telephone service. The third and most important effect upon the company's technical activities following this change in management control was reflected in the manner in which the new executives of the company met the threatened invasion of their wire telephone industry by the emerging science of "wireless" telephony. The second of the above factors resulted in the institution of the company's present policy on engineering and standardization, of which the origin and objectives are indicated in this chapter, with detailed analysis reserved for treatment in chapter 9. The third factor above noted was to result in the present broad scope of Bell System research.

Definition of responsibilities of American Co., Western, and associated companies.—The technical activities of the American Co., the associated companies, and Western were reorganized by Carty and Vail in 1907, with definite responsibilities and limitations assigned to each. In general the associated companies were to do no research work but were required to bring to the attention of the American Co. the need for any new type of apparatus or any suggestion on development work. The American Co. was to pass upon the desirability of carrying on the indicated activity. If the latter deemed it desirable for such work to be undertaken, the Western Electric's engineering department was to be authorized by the American Co. to carry on the required engineering activity on specific "work orders" originated by the American Co.'s staff, with specific objectives and expense limitations stipulated by the latter.

¹³ The company's policy on competition, and changes in the policy during the period 1902-7 and subsequently, are treated more fully in ch. 8.

¹⁴ The 1902-07 changes in management control of the American Co., under the influence of a group of investment bankers, are described in ch. 4.

Three characteristics stand out in the rearrangement of functions and responsibilities which were instituted under Vail subsequent to 1907. First, the associated companies largely discontinued independent research in the field of telephony. Second, the sole responsibility and ultimate control over selection of individual projects and definition of objectives in any technical work to be carried on (for the Bell System) by Western Electric was placed with, and has since continuously resided in, the American Co. Third, responsibility was placed with the American Co. for establishing approved standard types of apparatus which Western was authorized to manufacture for the associated companies. This policy of standardization limited the number of different forms in which particular pieces of apparatus or equipment might be made available to serve the same or similar purposes. This effort at standardization, although recognized by Hayes prior to 1907 as a desirable activity, was given increasing impetus under Carty, and was centralized directly under control of the American Co.¹⁵ In effect, this reorganization and redefinition of authority resulted in a rigid centralization of responsibility for the technical activities and policy of the entire Bell System in the hands of an American Co. executive, John J. Carty, under the control of the new president, Theodore N. Vail.

Following this reorganization, there emerged two fields of technical activity, each having a more definite objective and policy. One of these in general continued the previous field of technical activity, though reorganized and reoriented, while the other was more nearly a new type of corporate effort, having a new objective. Out of the somewhat amorphous technical activities of the period prior to 1907 there were evolved certain objectives, practices, and policies which are described in chapter 9 under the title "Engineering and Standardization." Shortly after this reorganization and redefinition of the previous field of technical activities, a new kind of technical activity was introduced, defined as research. Thus in the years immediately following the company's change of management in 1907 the company's previous technical efforts were split into two areas of technical effort having distinctive objectives. Although the policy on engineering and standardization is taken up in detail only in chapter 9, the origin of that policy out of the previous technical activities is described in this chapter because of its close association with the above history of technical activities prior to 1907. The origin of a new research policy, after 1907, is intelligible only by reference to this history of previous and concurrent technical activities.

Early evidence of new policy on research.—The phrase "fundamental research" scarcely appeared at all in the company's technical department vocabulary until about 1910. Certain activities during 1908 and 1909 were reported separately under the title "Research," but those activities were neither distinctive nor numerous until 1911, when the first serious effort was made to institute a completely new type of technical effort. During that year a research branch was organized within Western Electric's engineering department, with the stated intention of hiring the best technical talent available. The completeness with which the policies of 1906 were reversed, under the new

¹⁵ This policy and its objectives are described and analyzed more in detail in ch. 9 on Engineering and Standardization.

management installed in 1907, is sharply defined by comparison of the 1906 and 1911 reports. In 1906 Chief Engineer Hayes reported: ¹⁶

Every effort in the department is being exerted toward perfecting the engineering methods; no one is employed who, as an inventor, is capable of originating new apparatus of novel design. In consequence of this it will be necessary in many cases to depend upon the acquisition of inventions of outside men, leaving the adaptation of them to our own engineers and to the Western Electric Co.

In 1911 Chief Engineer Carty, who replaced Hayes, reported on the personnel of the new research branch as follows: ¹⁷

To make adequate progress with this work, it was decided to organize a branch of the engineering department which should include in its personnel the best talent available and in its equipment the best facilities possible for the highest grade research laboratory work. * * * A number of highly trained and experienced physicists have been employed, beside a group of assistants of lesser attainments and experience. Four of the men in direct charge of the investigations under way have taken their doctor's degree at one or another of the leading American universities, and three of these men have had special opportunities for experience as instructors in university work, or as assistants in research laboratories, such as the Bureau of Standards in Washington. Another man in charge of an important investigation has had a considerable amount of postgraduate work and was for some time a professor of electrical engineering at a well-known institution.

The immediate interest of this new research branch, and its recognition of the progress which "outside men" had accomplished, were shown by the further statement in the same report:

As soon as the research branch was established, work on the telephone-repeater problem was taken up on a comprehensive scale. * * * The research work in this case has been undertaken on the broadest possible lines. * * *

During the last 10 or 15 years that branch of physics which forms a part of electrical science has made wonderful advances. In connection with many of these advances practical applications have from time to time been suggested by engineers and physicists. * * * Research work is being conducted covering the phenomena involved in the cases which seem most likely to have practical application to the repeater problem.

It is yet too soon to report as to the commercial results of this study, but with reference to the proposition as a whole, it should be stated that here is a field of large possibility which will unquestionably pay liberally for whatever investigations may be made. * * *

Influence of Lee De Forest's vacuum-tube patents.—The matter with which the expanded research staff of the American Co. became actively concerned in the early years following its organization was the potentialities of radio in the communications field, particularly with relation to telephony. ¹⁸ These developments were of such nature that for the first time the "wireless" art, previously confined to telegraphy, was expanded to include possibilities of radiotelephony as well as radiotelegraphy. Radiotelephony emerged from these scientific developments as a potential competitor of wire telephony, through its threat of providing an alternate or substitute method of telephone communication (especially over long distances) of potentially large commercial importance. Vail's early attention to radiotelephony was indicated by his correspondence in August 1907 with Robert Fleming (of London), who was associated with a large English investment house. Vail, in reporting to Fleming on the company's progress and prospects, deprecated the competitive threat of the new science, stating: ¹⁹

As to the "wireless": I can only refer you to the success of the wireless telegraph and the inroad made by it upon the general telegraphic situation as compared with

¹⁶ Annual report of Hayes to President Fish, December 31, 1906. See exhibit 1951-A, p. 105.

¹⁷ From Carty's 1911 annual report, p. 23. See exhibit 1951-A, pp. 134-136.

¹⁸ See exhibit 2112, p. 22.

¹⁹ Letter from President Vail to Robert Fleming, 2 Princes St., London, England, dated August 7, 1907.

the promises and prophecies. The difficulties of the wireless telegraph are as nothing compared with the difficulties in the way of the wireless telephone.

The efforts later put forth by the American Co. and its apparent concern to establish itself in a dominant position in radiotelephony, especially after the advent of the De Forest vacuum-tube inventions, are somewhat in contrast to this apparent indifference to the new art.

In efforts to justify the expenditures which the Bell System subsequently made in the field of radio, Frank B. Jewett, vice president of the American Co., discussing the reasons for early research effort in radio, made the following statement: ²⁰

From the very earliest days following Marconi, vast claims for radio have been made, both as to its field of applicability and the extent to which it was destined to replace wire transmission, and also as to the speed with which these claims were likely to be realized. * * *

In the face of the potential possibilities which undoubtedly existed and the claims for realization which were widely heralded, and in the absence of information as to how far these claims were founded on fact, and how rapidly they might reasonably develop in reality, it was early clear to the American Telephone & Telegraph Co., and to all in the Bell System, that a full, thorough, and complete understanding of radio must be had at all times if the art of telephony and the business of the associated companies in the giving of telephone service was to be advanced and the money invested in that service safeguarded. * * *

Protection of the capital invested in the existing wire telephone industry was thus admitted to be an objective of this new effort. A further and more specific reason for the American Co.'s increased interest in research was indicated by Jewett, in the intercompany correspondence above quoted, to be as follows:

In the years preceding about 1912-14, when the emphasis on radio was primarily that of its possibilities in the telegraph field, there was not much object in carrying forward elaborate experimental research and development work in the field of (radio) telephony, primarily because the then mode of transmission and the types of transmitting and receiving apparatus available did not lend themselves to telephone. * * *

With the advent of the vacuum tube, about 1912, as a powerful potential tool for the generation, modulation, detection, and amplification of continuous high-frequency currents, and with the progress that had been made in the direction of continuous wave transmission and toward a wider band of frequencies in the shorter wave-length region, the whole picture took on an entirely different aspect.

Beginning at that time we (and others) commenced a vigorous and extensive program of research and development in the field of radiotelephony, and have continued the work uninterruptedly ever since. * * *

On January 15, 1907, patent No. 841,387 was issued to Lee De Forest; on February 18, 1908, patent No. 879,532 was issued to the same individual, on the same type of new device, which since has come to be known as the three-element vacuum tube. The tremendous importance of this independently developed radio invention was indicated in 1918 by George E. Folk, general patent attorney of the American Co., in the following words:

The three-element vacuum tube has frequently been referred to as the heart of radio. It can, with equal truth, be referred to as the heart of the carrier current, wired telephony, and telegraphy.

In the field of wire telephony, too, the De Forest vacuum-tube invention was of tremendous commercial significance. Whereas the distances practically covered by wire telephony previously had been limited by the fact that the received currents were too weak to be heard, and the known devices for amplifying the weak currents had

²⁰ Letter from Frank B. Jewett to Mr. E. L. Blackman (of the American Co.'s legal staff), dated March 9, 1932.

not proved commercially practical beyond a few hundred miles because of their tendency to distort the variations of the voice currents amplified, this new device, with its inherent possibilities of extreme accuracy in amplification of each small variation in the voice current, expanded wire telephone transmission practically to unlimited horizons.

It is apparent from the records of the American Co. that at the time the first rights under the De Forest patents were acquired, the prime interest of the Bell System was in the development of a satisfactory repeater to be used in connection with long-distance wire telephony. However, the subsequent acquisition of rights under these patents in connection with radiotelephony indicated that the Bell System officials early recognized the potentialities of radiotelephony and their intention to dominate this field also.

Out of this invention came results of tremendous scientific and commercial significance. It afforded a greatly improved method of amplifying the minute currents picked up by radio antennas; it afforded an excellent means for "modulating" radio currents to conform with the intricate current variations which represent the voice in electrical transmission.²¹ Out of these possibilities arose the technical feasibility of transforming wireless telegraphy into wireless telephony, or radiotelephony, as it came to be known.

The De Forest vacuum-tube inventions had two important significances for the Bell System: First, it afforded advances in the technique of radiotelegraphy until radiotelephony became possible, and for the first time offered a competitive threat to Bell's long-distance service through the possible substitution of radio for transmission of medium- and long-distance telephone communication; second, it offered a method by which the art of wire telephony could accomplish, for the first time, a commercially practicable long-distance telephone communication over wires. Under these conditions the development of telephone communication over long distances became a technical possibility, either by wire or by radio. The relative rapidity of commercial adoption and exploitation of the two methods necessarily was affected by the comparative aggressiveness in scientific development and engineering perfection of the device as applied to the two fields. In April 1909 Carty made direct reference to the possibility of radio experimenters developing and controlling a successful "telephone repeater," in a memorandum dated April 8, 1909, entitled "Additional Force Required—Engineer," in which he said:

One additional argument making for vigorous work upon the development of a more powerful repeater I call to your particular attention. At the present time scientists in Germany, France, and Italy, and a number of able experimenters in America are at work upon the problem of wireless telephony. While this branch of the art seems at present to be rather remote in its prospects of success, a most powerful impetus would be given to it if a suitable telephone repeater were available. Whoever can supply and control the necessary telephone repeater²² will exert a dominating influence in the art of wireless telephony when it is developed. The lack of such a repeater for the art of wireless telephony and the number of able people at work upon that art create a situation which may result in some of these outsiders developing a telephone repeater before we have obtained one

²¹ A third very important use of the 3-element tube was as an oscillator, or generator of uniform high frequency alternating currents, which, when modulated to conform with voice current variations, served as a carrier for the latter. In this aspect, however, the 3-element vacuum tube was not so completely controlling, as there were other practical, though less desirable, generators such as the so-called arc and the Alexanderson alternator.

²² The company has always insisted upon referring to the vacuum tube, as here applied to wire telephony as a "telephone repeater," rather than as a "vacuum tube amplifier." Even as applied to the art of radio, where the vacuum tube was invented, the Bell System tends to regard it as a "telephone repeater" applied to radio purposes.

ourselves, unless we adopt vigorous measures from now on. A successful telephone repeater, therefore, would not only react most favorably upon our service where wires are used, but might put us in a position of control with respect to the art of wireless telephony should it turn out to be a factor of importance.

In view of the fact that the essential idea already had been evolved by De Forest's invention of the three-element vacuum tube, it is helpful to follow closely the American Co.'s further references to this radio invention and concurrent changes in the company's policy on research. That Carty was interested in the possibility of such an invention affording control work over radio, as well as over "telephone repeaters," was clearly indicated in his above memorandum of 1909.

Objectives of research activities in radio.—The American Co. instituted an intensive research and development program on the three-element vacuum tube. Before the numerous independent radio experiments had developed the full possibilities of the new device the Bell System had secured complete control of the three-element vacuum-tube patents and had launched into an intensive effort to develop its commercial possibilities in wire telephony. Out of this effort the company was able to establish commercial long-distance wire telephone service from coast to coast.

By 1914, the year in which a commercial grade of transcontinental wire telephone transmission was accomplished, the American Co.'s research effort turned to radio, apparently for the purpose of answering, for the investing public, the same question which Vail had been called upon to answer privately in correspondence with those investment representatives who were interested in the future business prospects of the company.

Late in December 1913 Carty and Jewett discussed the possibilities of developing trans-Atlantic radiotelephony, and in January 1914 the American Co. instituted a 1-year program to determine the technical possibilities and probable chances of ultimate success of trans-Atlantic radiotelephone transmission. In December 1914 the suggestion was made that a radiotelephone sending station be erected at Montauk Point, Long Island, and a receiving station at Wilmington, Del. The stations were established early in 1915, and successful tests were accomplished. The motive for these efforts of the Bell System in radiotelephony was indicated in a memorandum by Carty, which O. B. Blackwell (transmission development engineer of the Bell Telephone Laboratories) later summarized as follows: ²³

A memorandum by Mr. Carty (Mr. Carty's file No. 50, vol. 4, Developments of Wireless Telephony, memorandum undated but apparently April 1915) summarized the situation after the carrying through of the tests from Montauk Point to Wilmington, Del. The motive stressed appears to be the demonstration of the company's position in radiotelephony by being the first to transmit speech across the Atlantic. * * *

The latter demonstration was accomplished in 1915. Although no publicity attended the preliminary efforts, as soon as a brief transmission from Arlington, Va., had been distinguished and understood by the Bell System engineer located in the Eiffel Tower, in Paris, considerable publicity was given to the feat. Following this demonstration the company's efforts to establish and operate long-distance radiotelephone stations practically ceased for several years, probably due partly to the pressure of other efforts related to war activities. The effort was revived again in 1919, for reasons which were indicated

²³ Appendix written by O. B. Blackwell, for a memorandum dated February 24, 1932, entitled "Radio—Reasons for Carrying Out Bell System Development Work."

in a company summary of correspondence showing the steps which led to the building of certain radiotelephone stations, which stated in part: ²⁴

In May 1919, a memorandum was written by Mr. B. Gherardi to Mr. Thayer in which he states that in order to keep ahead of others in the wireless field and not lose out in the matter of patents a comprehensive wireless program had been drawn up after a conference with Mr. Jewett, the staffs of the Western Electric Co. and American Telephone & Telegraph Co., and Mr. Folk. * * *

Mr. Folk was the American Co.'s patent attorney.²⁵

In these efforts the company was shaping its radio research policy to afford it a controlling patent position in radio. The desire to obtain patent control over any and all forms of communication methods appears to have been at least as strong a motive as the wish on the part of the company to improve wire-telephone service to wire-telephone subscribers.

The necessity of stating the reasons for engaging in this early radio research work confronted the American Co. in 1932, in the course of its defense in the *Chicago Rate case*.²⁶ A brief review of the 1932 statements of the company will afford some indication of its present views on the motives underlying this early research work. Blackwell stated the reasons as follows: ²⁷

The motives which have led to the development work on radio may be classed, as I see it, under these three headings: (1) Commercial protection, (2) technique and patents, and (3) service.

Commercial protection, the first of those listed, was then explained and amplified as follows:

Under this can be placed the motives which arose from the claims made for radio that it would ultimately be able to furnish a large part of telephone services and would displace a considerable part of the existing telephone plant. The natural reaction was the determination to find out definitely the possibilities of radio. At no time, I believe, did the technical departments seriously fear that radio could handle any large part of the telephone service. It was considered important, however, to be able to demonstrate this fact. Furthermore, there was a feeling that active development of the radio art by this company and the public recognition of this fact was the best background to give weight to the company's statements regarding radio and to give assurance to the public that to whatever extent radio proved valuable this company would profit and not suffer from it.

In defining "technique and patents," Blackwell referred largely to the work which the company then conducted (and still is conducting) on coaxial cable systems, by which waves of radio frequency may be conducted along wires. It was stated that the highly involved and interesting technique of the radio art could properly be explored by the company, both to determine the possibilities of radio and also to determine radio's possible application to wire systems and "to prevent a patent situation developing which might restrict" the Bell System's wire developments.²⁸

²⁴ Letter from "R. H. Wilson—LG" to E. H. Colpitts (of Western's engineering department), dated November 11, 1922.

²⁵ An expenditure of \$500,000 was authorized, of which \$360,000 was expended to build a radio transmitter at Deal Beach, N. J., and a receiving station at Cliffwood, N. J.

²⁶ *Lindheimer v. Illinois Bell Telephone Co.*, 292 U. S. 151.

²⁷ O. B. Blackwell memorandum dated February 24, 1932, annotated "Mr. Colpitts per our conversation, O. B. B.," entitled "Radio—Reasons for carrying out Bell System development work." Frank B. Jewett, American Co. vice president in charge of the Laboratories, when presented with these statements during his testimony in the course of the investigation, corroborated the statements and agreed with their order, in which commercial protection was placed first (Transcript of Record, F. C. C., Special Investigation, Docket 1, p. 2867).

²⁸ It is of interest to note that the Bell System's researches on coaxial cable (which affords commercial protection against radio by offering a wire channel for the type of waves which, in radio, are radiated through space) had their origin in the so-called carrier experiments begun by the Bell System in 1914, about the time radio first appeared as a potential competitor of the Bell System's wire plant.

"Service" was explained by reference to the fact that radio was the only general way of communicating with moving vehicles, and also offered the most promising way of opening service to distant countries. Blackwell took the position that the Bell System, being responsible for the greater part of the country's wire-telephone service, could hardly do other than "push forward" in the allied communication field of radio.

No intimation was given here that other companies, engaged solely in the radio industry and financed by independent capital, might be willing and capable of developing and offering a public radio service, provided the Bell System's strong patent situation did not inhibit effective competitive efforts.²⁹ In this connection it may be noted that when the radiotelephone research program was renewed in 1919, Bancroft Gherardi, in a letter to Thayer on May 17, 1919, referred to the necessity of instituting the work promptly lest others undertake it, and result in a situation in which the Bell System "would soon be met by demands to connect with wireless systems controlled and operated by others." Blackwell admitted that the Bell System's efforts in affording service to mobile stations had not been "so successful" except for specific instances, but pointed out that the radiotelephone service to foreign countries had been established, with "favorable public reaction to the company."

The direct objectives of the Bell System in conducting this research work have been concisely stated by Blackwell in a memorandum dated February 4, 1931, addressed to E. H. Colpitts, then assistant vice president of the Laboratories. Blackwell specified three separate motives. The first concerned items which were justified "on the basis that the expected savings and service improvements will prove them in by a large margin." The second concerned items "that presumably will justify themselves on an economic basis." The reference to justification on an economic basis evidently contemplated immediate potential profits as contrasted with expenditures made for the protection of the investment generally without any immediate prospect of commercial use. Concerning the third motive, Blackwell stated:

A third classification of these items has not been justified on an economic basis but has been justified almost completely on a company-policy basis. This includes long-distance radio, ship-to-shore radio, radio for aviation purposes, long-distance submarine cable, certain wire system development as adjunct to the radio and submarine cables, telephotography, and television. All of these matters take us into new fields where there is a tremendous amount of development work which could be carried through if we went into the matter exhaustively.

²⁹ It is significant in this connection to note that research efforts were carried on to obtain controlling patents on all alternative methods, even though the company did not intend to make use of these alternative devices. The early origin of this policy, and its direct relation to the repeater, is indicated in Carty's letter to Western's chief engineer, Scribner, dated November 20, 1912, in which Carty stated, "In writing to Mr. Thayer today regarding the repeater matter, I pointed out that there was a chance that our specific development work, if properly patented, would put us in the position to have something to say about the use of mercury-arc repeaters even if the fundamental patents in Europe were in the hands of others. This would be true only if we patented not only the specific device which looks best to us now but also the alternative methods. It is to suggest to you a very careful consideration of the patenting of these alternative methods that I am now writing. Naturally, I would not wish to delay the practical development of the repeater, but I should hope there would be some way whereby alternative methods might be thought out and patented. I think it is important that you go as far in this direction as you can. And while I am speaking of alternative methods in respect to this particular device, I think that the patenting of the alternatives is a very important feature of our work and I suggest that the routine covering such matters be looked carefully over and strengthened if necessary, the idea being that as far as possible on all new developments of any substantial importance, we patent the alternative methods."

On November 22, 1912, Scribner replied: "Replying to your letter of the 20th instant on the subject of the development of alternate methods to strengthen our patent situation, I sometime ago pointed out to Mr. Halligan the desirability of doing what you propose and, after discussion with Mr. Thayer, it was decided that we should adopt the policy of developing alternate methods to the more important lines of development, and carry on these alternatives to a point where patents might be secured. . . . The plan is to keep the actual physical tests down to the point where simply enough information is gained to justify the prosecution of a patent application."

I think policy considerations should continue to control on this class of work. There is no reason that I can see to argue from the purely development standpoint that the effort on them should be increased. It should be understood that even with the large effort being made we cannot be sure we will continue to lead the world on all these matters.

Reference is made to policy considerations as a motive for research activities which were not justified on an economic basis. The desire to keep ahead of others in the radio field and not lose out in the matter of patents is an indication of the policy-consideration involved. A more detailed statement of company policy relevant to those research activities carried on without an attempt to justify them on an economic basis is given in a later section of this chapter.³⁰

Before continuing with the analysis of the company's policy on research which originated as indicated in the previous sections of this chapter, a summary of the organization, growth, and cost of research activities over the period 1907 to 1937 is given to afford some conception of the nature of those activities and the source of funds by which they have been supported.

Organization of departments and functions.—The changes in organization and objective of the company's technical activities following 1907 have been set forth above. Essentially, the effort from 1907 to 1909 was to retrench in both expense and personnel, and included concentrating Western's three laboratories into a single unit, placing the American Co. in ultimate control of all technical activities, and charging Western with the responsibility of carrying on the projects at its unified laboratory, though only upon specific authorization of the American Co.

The position of dual control exercised by the American Co. over Western's technical activities and over the associated companies' telephone plant operation logically resulted in division of the American Co.'s engineering department into two types of activities: First, those concerned with supervision and control of Western's technical activities (both research and engineering); second, the supervision and control of all technical aspects of the associated companies' plant and operating methods in order to exploit with commercial success the products of Western's research and engineering. In 1919 this dual nature of the American Co.'s engineering department resulted in its division into two departments. The first of these two departments was given the title of "Development and research department," exercising control over Western's technical activities, while the second came to be known as the operation and engineering department, "exercising control over the plant and operating methods" of the associated companies.

Western's technical activities were carried on in its engineering department. After Western's Boston laboratory was abandoned in 1908, its Chicago laboratory activities were gradually transferred to New York where the work was unified at 463 West Street, which later was to become the location of the present Bell Telephone Laboratories. The functions of this engineering department, in 1908, were divided into the following categories:

1. Development branch, designing new apparatus and circuits.
2. Equipment branch, designing or specifying the apparatus and circuits for specific central-office installation, and aiding the American Co. in establishing standard practices.

³⁰ See section entitled "Significance of Bell System Research Policy."

3. Inspection branch, setting quality standards and inspection limits for manufacture and repair of apparatus.

As early as 1908 the term "research" was used to describe a small and essentially nondistinctive part of the activities of the development branch, but apparently the title alone and not the activity represented anything resembling fundamental research as it later came to be used by the company, though the mere use of the term indicated early thought in that direction.

In 1909 Carty asked for additional personnel, citing the necessity for developing a satisfactory repeater for use in the wire system, the emergence of radiotelephony, and the desirability of attaining a controlling position therein through Bell System research work. In 1911, the so-called "research" work of the development branch was split off into a separate "research" branch, making four branches in the engineering department: Development, equipment, inspection, and research. The next year (1912) two more branches were set up, the chemical branch and the transmission branch. The function of the former is evident and apparently it was concerned almost entirely with specific detail work, while the latter was closely related to the research branch in that both "tended to run largely to fundamental studies."³¹ The work remaining in the development branch was described as "bearing on the improvement of the quality as well as the reduction in cost of our products,"³² thus indicating its close relation to the objectives of the field of engineering and standardization which has been referred to previously and is described in greater detail in chapter 9.

On January 1, 1925, the engineering department of the Western Electric was incorporated separately as the Bell Telephone Laboratories, Inc., equally owned by the American Co. and by its 99-percent-owned subsidiary, Western. This separate incorporation in itself caused no major change in the classification of effort until March 1934, when the American Co.'s development and research department also was transferred from the American Co. to the Laboratories, except for its chief executive officer, Frank B. Jewett, who remained in charge of the transferred work as president of the entire Laboratories, but at the same time continued as vice president of the American Co.³³

The operation and engineering department continued as the technical liaison and means for control and standardization of the associated companies' plant and operation methods. It is divided into three classifications of effort: Traffic (central office operating methods); commercial (relations with customers, including forecast of consumer demand for service); and plant (construction, operation, and maintenance of the telephone plant).³⁴

The department of development and research and the Bell Telephone Laboratories were in effect two parts of a single organization charged with fundamental research and engineering development. Laboratories, together with the department of development and

³¹ From the 1914 annual report of the department, pp. C and D.

³² From the 1916 annual report of the department, p. 1.

³³ This arrangement apparently was for the purpose of affording control by the American Co. over the Laboratories; in addition the small clerical group retained by Jewett in the American Co. under his title of "vice president in charge of development and research" afforded a convenient organization, within the American Co., to receive the charges for research work done by the Laboratories. As is described later in this chapter, the expenses thus transferred to the American Co. are passed on to the operating companies through the license service contract fee received by the American Co. from its associated companies. For a more detailed explanation of the license-service contract, see ch. 6.

³⁴ Two departments, plant operation and plant engineering, are maintained under the latter classification.

research, carry on fundamental research and engineering development; stipulate requirements and standardized methods of installation, operation, and maintenance of new equipment which had been standardized for introduction into the associated companies; transmit to Western the specifications and requirements of apparatus to be manufactured; and exercise control over the quality of the products manufactured under these specifications.³⁵

Expenses incurred by Laboratories are divided into distinct categories according to the unit for which the work is done, for the American Co. or for Western,³⁶ as subsequently is shown in greater detail. The general distinction among these two broad classes of work is, respectively, (1) "fundamental research" and (2) specific engineering and design work in connection with products being manufactured for the Bell System.³⁷

Growth in personnel and expense.—The original retrenchment in activities following 1907 was reflected in the American Co.'s personnel up to the summer of 1909, after which a considerable expansion began, particularly in the strictly engineering personnel. From a total of 84 employees at the end of 1907 the personnel was reduced to 79 by the end of 1908, though the previous trend had been strongly upward.³⁸ However, by the end of the following year (1909) this retrenchment trend had been reversed and the staff consisted of 114 members.

During this period Western's engineering department reflected the same retrenchment, followed by a strong resurgence. From 368 employees at the end of 1907 the number declined to 249 at the end of 1908 and continued practically at that same figure up to May 1909. By the end of 1909, however, the number had increased to 358.³⁹

Subsequent personnel expansion in Western's engineering department was especially evident in those branches which have been described previously as most directly concerned with research rather than with engineering work. The total personnel of the development, research, chemical, and transmission branches increased from 347 in 1913 to 492 in 1914, an expansion of over 40 percent in 1 year.⁴⁰ The research and transmission branches, those carrying on the most fundamental research work, increased at a relatively greater rate, from 23 to 45 members and from 27 to 58 members, respectively.

The total increase of Western's engineering department activities, over the period 1910-15, and the specific nature of its increased work, were clearly set forth in the department's 1915 annual report, which stated:

The expansion of our engineering department during the past few years has been considerably greater in proportion than the normal growth of our business. In

³⁵ Laboratories carries on a very small amount of manufacturing activity on products of close requirements and on products easily produced in the model shop. It also carries on special investigations as it may be requested so to do by E. R. P. I., on subjects which do not contribute to national wire telephone service. The essential activity of the laboratories, however, is its Bell System research and engineering work.

³⁶ Research work done specifically for E. R. P. I. on commercially exploited products not contributing to Bell System telephone service (such as sound motion pictures) is charged to E. R. P. I. except that the expense of fundamental research resulting in the basic patents thus commercially exploited are charged to the American Co.

³⁷ Considerable latitude apparently exists in the American Co.'s definition of the word "fundamental." During the depression years, when Western's sales volume was reduced sharply, charges for certain classes of work were transferred from it to the American Co. The American Co. has contended, however, that during the depression years the nature of these research activities was altered, and that they became more fundamental in aspect. The total expenses billed by Laboratories to Western have exhibited a quite definite relationship to the latter's volume of sales.

³⁸ See exhibit 1951-A, p. 113.

³⁹ See exhibit 1951-A, p. 114.

⁴⁰ See exhibit 1951-A, p. 146.

1910, for example, we had 192 engineers employed on development work, and our expenditure amounted to \$493,527. In 1915 we had 959 men and expended \$1,539,621, an increase of 295 percent in employees and 223 percent in expenditures.

This condition has been brought about by new demands for research in the fundamentals of the science of telephony; together with larger and very important activities in new branches of the telephone, telegraph, and wireless arts.

The report stated further that the accomplishments flowing out of the vacuum tube's application in long-distance wire telephony as well as in radiotelephony represented advances which were expected to exert a large influence on the trend of the company's future business.

The trend of growth in technical personnel over the last two decades is indicated in the following table:

TABLE 39.—*Growth in personnel of the engineering department of the American Co. and Western Electric Co. (Bell Telephone Laboratories after 1925) as of Dec. 31 of each year.*

Year	American Co.	Western (1917-24) ¹ Laboratories (1925-34) ¹	Year	American Co.	Western (1917-24) ¹ Laboratories (1925-34) ¹
1917.....	422	1,998	1926.....	1,116	3,507
1918.....	420	2,478	1927.....	1,175	3,622
1919.....	533	2,748	1928.....	1,236	3,907
1920.....	768	3,347	1929.....	1,300	4,855
1921.....	868	2,906	1930.....	1,341	5,419
1922.....	826	3,116	1931.....	1,320	5,106
1923.....	892	3,194	1932.....	1,177	3,632
1924.....	963	3,243	1933.....	1,110	3,527
1925.....	1,035	3,393	1934.....	1,623	4,213

¹ Excludes manufacturing activities carried on in vacuum-tube shop.

² Reflects transfer of American Co.'s development and research department to the Laboratories.

Expenses for research, engineering, and standardization activities have been incurred by Western and the American Co. prior to 1925, and by the Laboratories and the American Co. for 1925 and subsequently.⁴¹

As stated previously in this chapter, fundamental research expenses are billed to the American Co. while engineering expenses are billed to Western. This division of Western's engineering department expenses prior to 1925, and of Laboratories' total expenses after its organization in that year, as between Western, the American Co., and E. R. P. I., for the past 20 years, is given in the following table:

TABLE 40.—*Division of engineering and research expenditures of Western and Bell Laboratories between Western, American Co., and E. R. P. I.*

Year	Total expenditures	Percent of total expenditures charged to—		
		American Co.	Western	E. R. P. I. ¹
Incurred by Western Electric Co.:				
1916.....	\$2,849,000	7.69	92.31	-----
1917.....	4,081,000	7.52	92.48	-----
1918.....	6,039,000	1.62	96.38	-----
1919.....	6,112,000	10.73	89.27	-----
1920.....	9,243,000	17.74	82.26	-----
1921.....	8,585,000	12.63	87.37	-----

¹ E. R. P. I. was organized in 1927.

⁴¹ The expenses incurred by Western prior to 1925 were partly absorbed in its manufacturing costs and partly billed to the American Co., while Laboratories' expenses covering the activities Western formerly carried on both for itself and for the American Co., are divided between Western and the American Co., on the basis of individual decisions on each of the projects undertaken.

TABLE 40.—*Division of engineering and research expenditures of Western and Bell Laboratories between Western, American Co., and E. R. P. I.—Continued*

Year	Total expenditures	Percent of total expenditures charged to—		
		American Co.	Western	E. R. P. I.
Incurred by Western Electric Co.—Continued.				
1922.....	\$8, 250, 000	11. 79	88. 21	-----
1923.....	9, 193, 000	13. 26	86. 74	-----
1924.....	10, 268, 000	10. 64	89. 36	-----
Incurred by Bell Telephone Laboratories:				
1925.....	11, 870, 553	11. 67	88. 33	-----
1926.....	12, 552, 135	12. 97	87. 03	-----
1927.....	13, 885, 980	18. 21	76. 71	5. 08
1928.....	15, 123, 796	17. 10	76. 86	6. 04
1929.....	19, 819, 567	19. 28	74. 58	6. 14
1930.....	22, 643, 036	28. 06	67. 39	4. 55
1931.....	20, 977, 151	26. 82	69. 68	3. 50
1932.....	15, 871, 752	35. 30	62. 02	2. 68
1933.....	12, 653, 140	45. 28	52. 04	2. 70
1934.....	15, 963, 071	51. 49	46. 16	2. 35
1935.....	16, 561, 388	55. 28	42. 45	2. 27
20-year total.....	242, 541, 569	-----	-----	-----

Source: See exhibit 243, table 1, p. 3.

This expenditure of approximately \$250,000,000, over a 20-year period, including a major business depression, is an over-all measure of the amount of funds devoted by the Bell System to the accomplishment of those objectives and policies presented in this chapter on Research and in chapter 9 on Engineering and Standardization.

The portion of this expense billed to the American Co., when added to the expense which the American Co.'s development and research department incurs on its own behalf, constitutes the American Co.'s total expense for technical activities.⁴² The American Co.'s technical activity expenses are compared with the total departmental expenses of its general department in the following table:⁴³

TABLE 41.—*The American Co.'s expense for technical activities compared with total departmental expenses of its general department by 5-year totals over the period 1901-35*

Period	Total departmental expense of general department	Expense of technical activities	Technical activity expense as a percent of total
(a)	(b)	(c)	(d)
1901 to 1905.....	\$3, 670, 300	\$1, 169, 528	32
1906 to 1910.....	6, 659, 013	1, 493, 602	23
1911 to 1915.....	12, 963, 336	3, 263, 701	25
1916 to 1920.....	26, 303, 941	10, 553, 264	40
1921 to 1925.....	53, 716, 603	26, 950, 673	50
1926 to 1930.....	90, 344, 500	51, 546, 245	57
1931 to 1935.....	99, 205, 113	62, 152, 646	63
Total.....	292, 772, 806	157, 129, 659	54

Source: Exhibit 1951-B, appendix B, schedule 2.

⁴² These technical activities include the expense of the American Co.'s development and research department, as well as its operation and engineering department, of which the latter cannot be termed a research activity. This classification affords a comparison of the American Co.'s total expense for technical activities in relation to its total general department expense. In a later section are given the total expense of strictly research projects, which afford an expense measure of what the American Co. terms "fundamental research."

⁴³ The expenses, which are combined in the departmental expenses shown in this table include executive, development and research, operation and engineering, comptroller, treasury, legal, information, general service bureau, and some additional miscellaneous and unclassified expenses, but do not include taxes, maintenance and depreciation of leased telephone instruments, or expenses of the long lines department. For a more detailed statement of these expenses, see exhibit 1360-B, schedules 58 and 59.

Two facts stand out in this expense table: First, the subsequent institution of a program of increasing expense is indicated both in the tripling of the 1911-15 expenses in the subsequent 5-year period, as well as in its increase from 25 to 40 percent of total expenses; second, the continuous expansion in these activities is indicated by the constant increase in technical expenses up to the present, both in amount and as a percent of the total department's expenses.⁴⁴

Nature and cost of research projects.—The initial research on long-distance wire telephony and on radiotelephony was broadened and expanded in the subsequent years to include research upon a wide variety of subjects, including wire telegraphy, wire telephony, radiotelephony, television, and sound motion pictures. Since detailed analysis of the Bell System's research projects has been made only for the period January 1, 1925, to December 31, 1935, this presentation is confined to that period in illustrating the nature and cost of research activities.

During this 11-year period, for which the nature and expense of research work are more particularly described, the American Co.'s total expenses incurred in technical activities, on the same basis as presented in table 41, was approximately \$120,000,000.⁴⁵ Of this total, the American Co.'s operation and engineering department accounted for \$41,500,000, and its development and research department expenses accounted for the remaining \$78,500,000. The latter total, in turn, consisted of \$27,500,000 of expense incurred directly by the American Co.'s development and research department, and the remainder, \$51,000,000, constituted expenses incurred by the Laboratories, but billed to the American Co.'s development and research department as representing fundamental research activities.⁴⁶ It is the work represented by the latter amount that has been analyzed in detail and is summarized here.

During this period the Laboratories' work has been carried on under 16 expense classifications, each divided into various subclasses which have varied as the emphasis of research work changed. Laboratories' expenses over this 11-year period have totaled \$153,387,969, of which \$51,328,008 has been billed to the American Co.'s development and research department, divided among the 16 classifications as shown in the following table:

⁴⁴ The separate research activities of the associated companies, the expenditures for which are not included in table 41, were discontinued in 1907.

⁴⁵ Approximate total expenses are given here merely to afford comparison of the total research-project expenses with total company expenses. Annual figures and a detailed break-down into subclassifications of expense are given in exhibit 1951-B, appendix B, schedule 2; exhibit 243, p. 12, table 3; and exhibit 1360-B, schedule 59.

⁴⁶ The work done by the American Co.'s development and research department on its own account, totaling the above indicated figure of \$27,500,000, is now done by the Laboratories, since the transfer of this American Co. department to the Laboratories in 1934, as indicated previously in the section on Organization of Departments and Functions. The only expenses now incurred directly by the development and research department on its own account are 2 small items, "executive assistant" and "technical representative in Europe" expenses. The \$51,000,000 of Laboratories expenses billed to the American Co. over this 11-year period therefore includes, for 1934 and 1935, the expense of work previously done by the development and research department of the American Co. The nature of the research projects subsequently to be described covers both the Laboratories' and the development and research department's present functions, though the total expense shown (\$51,000,000) reflects only that part of the development and research work done by the Laboratories in 1934 and 1935.

TABLE 42.—*Total expense billed by Laboratories to the American Co. for research activities over the period Jan. 1, 1925, to Dec. 31, 1935*

Class of work:	
Wire-transmission systems.....	\$14, 222, 212
Radio-transmission systems.....	9, 191, 095
General transmission apparatus.....	4, 438, 758
Outside plant.....	4, 423, 409
Central-office systems and apparatus.....	3, 866, 613
Transmitters, receivers, and induction coils.....	2, 774, 013
Fundamental studies.....	2, 300, 120
Materials and processes.....	2, 289, 186
Submarine cable.....	2, 209, 989
Other communication systems and apparatus.....	1, 646, 087
Interference prevention and protection.....	1, 299, 846
Station equipment.....	1, 017, 891
Inspection engineering.....	684, 987
Lead-covered cable.....	494, 738
Patents.....	308, 862
Miscellaneous.....	160, 202
Total.....	51, 328, 008

Source: See exhibit 243, table 5, p. 18.

The first 3 of the above classes of expenditures account for over half the total expenses; consequently, the projects in these classes are given more attention in this summary than those relating to the remaining 13.

"Wire-transmission-systems" research constitutes over 27 percent of the total for all 16 classifications. Of the projects carried on by the Laboratories, in this classification, a steadily increasing proportion is termed "fundamental research" and billed to the American Co. In 1935 the American Co. was charged with 92 percent of the total Laboratories' expense in this classification. The \$14,000,000 expended on this subject fall into the following types of work and amounts:

TABLE 43.—*Wire-transmission research expenses billed to the American Co. (1925 to 1935, inclusive)*

Class of work:	
Carrier on cable.....	\$3, 606, 392
General wire transmission.....	2, 305, 214
Voice-frequency equipment and circuits.....	1, 483, 551
Television.....	1, 321, 183
Telegraph equipment.....	1, 082, 826
Carrier telephone.....	1, 052, 018
Coaxial conductor systems.....	969, 011
Picture transmission.....	949, 728
Trans-Atlantic radio telephone and trans-Atlantic submarine cable (connecting equipment).....	839, 128
Miscellaneous.....	613, 161
Total.....	14, 222, 212

Source: See exhibit 243, table 6, p. 21.

"Carrier on cable" includes development of equipment necessary to the use of carrier-current operation in toll cables. This sub-classification was originated in 1930.⁴⁷ Little or no practical use of

⁴⁷ "Carrier" on open wires (which is now widely used), as well as on wires in a telephone cable (a method which is not yet generally used), is the conduction, on or along wires, of electric waves with a frequency high enough above the relatively low frequency of voice currents that they do not interfere with the ordinary voice-frequency transmission being carried along the wire simultaneously. These waves carry the transmission of an additional telephone conversation message superimposed on this carrier wave.

this development has been made, and its future use may be affected by the "coaxial" cable development, which is being accelerated rapidly and may displace "carrier on cable" before it finds any considerable commercial application.

"General wire transmission" includes expenditures on account of a variety of subjects. The figures in table 43 include expenditures on account of coaxial cable, trans-Atlantic radiotelephone and trans-Atlantic submarine cable prior to their segregation as separate classifications. It currently includes expenditures on account of synchronization methods applicable to "superpower" distributing systems, common-frequency radio broadcasting, constant-frequency sources applicable to ultra-short-wave transmission, such as is used in radio, television, and carrier-current operation; and vacuum-tube circuit study.

"Voice-frequency equipment and circuits" concerns methods of causing circuit changes to be operated automatically by voice currents. These methods are applicable to trans-Atlantic circuits, long toll lines, phonograph and sound-film recording, radio-broadcasting systems, and carrier on cable.

"Television" work was separately classified beginning in 1926 but as yet has had no practical application in the Bell System. Although officials of the American Co. have testified that their company is at present interested solely in the transmission of television rather than the production of sending and receiving apparatus, by far the largest part of the expenditure has been on case No. 33089, on "systems of television," largely devoted to television sending and receiving apparatus. The objective of this case was stated by the Laboratories to be:

The object of this case is to keep the Bell System abreast of the general advances in the art of television and to perform such work in connection with new ideas and suggestions as to methods, apparatus, and field of service as may be necessary to properly evaluate them.

This case accounted for about 65 percent of the total television-research expense. Approximately another 15 percent was expended in public "demonstration" of the advances which the Bell System thus accomplished. Some 12 percent of the expense directly concerned the wire transmission of television.

The "coaxial conductor" expenses shown above have been incurred in the years 1932 to 1935. A "coaxial" cable consists of one or more groups of conductors, each group comprising a central conductor located within and coaxial with one or more outer conductors in tubular form. This type of conductor will carry a band of wave frequencies extending from very low (voice) frequencies to very high (radio) frequencies, thus exhibiting some of the characteristics of the ether in its ability to carry radio waves. This cable is important as a part of the development of television,⁴⁸ which cannot be transmitted on ordinary telephone wires or cable, but must be transmitted either by radio or by some type of wire plant different from that which is now installed in the Bell System for public telephone service. Coaxial cable may be the foundation for the method whereby the Bell System will supply, in the future, the Nation-wide network for the transmission of television in somewhat the same manner as

⁴⁸ In addition, of course, to its possibilities in the simultaneous transmission of hundreds of telephone conversations.

it now supplies the Nation-wide wire network in connection with radio broadcasting. As in the "television" case, this work includes the expense in case No. 35880 of installing and operating an experimental coaxial cable transmission between New York and Philadelphia. The objectives of this installation were stated by the Laboratories to be:

* * * This installation will provide (1) a demonstration of the practicability of such a system, (2) a definite establishment of the Bell System position in this sort of transmission, (3) practical experience to the Laboratories, the Western Electric Co., and the long lines, and (4) facilities for testing television of moderate detail.⁴⁰

"Picture transmission" refers to "telephotos," or photographs and pictures transmitted by wire.

"Trans-Atlantic radiotelephone and trans-Atlantic submarine cable connecting equipment" principally concerns the terminal connecting equipment for a proposed trans-Atlantic submarine telephone cable, a project which has had to be abandoned, at least for the time being, for reasons as indicated below, under "Submarine cable."

The projects thus far described afford some idea of the nature of the research work in this largest single classification, constituting well over one-fourth of the entire \$51,328,008 of research expense.

"Radio transmission systems" research expense constitutes over 17 percent of the total for all 16 classifications. The \$9,191,095 cost of radio transmission system research has been expended in the work classifications and amounts shown in the following table:

TABLE 44.—*Radio transmission research expenses billed to the American Co. (1925-35, inclusive)*

Class of work:	Expense
Short wave, general.....	\$3, 253, 066
Transoceanic radio.....	2, 575, 841
Aircraft communication.....	1, 276, 469
Other radio receiving and transmitting.....	1, 194, 835
Ship-to-shore.....	730, 989
Miscellaneous.....	159, 895
Total.....	9, 191, 095

Source: Exhibit 243, table 14, p. 53.

"Short wave—general" is over 95 percent constituted of two subclasses, "short-wave radio" and "ultra short wave." The former was concerned with the establishment of short-wave trans-Atlantic radio systems as alternates to the then-existing long-wave systems. On "ultra short wave" work the economic value indicated in the case was stated by Laboratories in the following terms:

The economies to be expected from this investigation depend upon the degree to which ultra-short-wave circuits are found to be valuable either as adjuncts to the present telephone facilities or as competitors to them over difficult terrain. There are other possible commercial fields in short-distance communication, in the mobile services and in broadcasting.

"Transoceanic radio" is divided into "short wave" work (\$1,922,371) and "long wave" work (\$653,470). The major part of the former expense was of the same nature as that described above under "Short wave—general." The latter expense was concerned with the research on a new long-wave trans-Atlantic system.

⁴⁰ Exhibit 243, p. 27, case No. 35880.

"Aircraft communication," the third largest item, concerns the development of radiotelephone equipment for use on aircraft and at ground stations communicating with aircraft.

The last important classification, "other radio receiving and transmitting," apparently is a general case to cover advance research work before specific projects develop to the point where they become separate classes, as happened in the case of the "short wave—general" classification. The statement of "economic value" given for this case indicates the objective in this work in the following terms:

The economic value of this type of work results principally from its influence on the more definite development projects and on the patent protection obtained on the more fundamental radio circuits.

"General transmission apparatus" research expense constitutes over 8 percent of the total of all 16 classifications. This third classification of research activities, added to the two classifications above summarized, accounts for well over half of the total expense of \$51,000,000, while the other half is accounted for by the remaining 13 classifications. This class of research activities consists of the following classifications of work and expense:

TABLE 45.—*General transmission apparatus research expenses billed to the American Co. (1925-35, inclusive)*

Class of work:	Expense
Vacuum tubes.....	\$3, 568, 560
Photoelectric cell.....	328, 532
Testing apparatus.....	310, 801
Miscellaneous.....	230, 865
Total.....	4, 438, 758

Source: See exhibit 243, table 16, p. 68.

The research work on vacuum tubes largely concerns the physical processes involved in their manufacture and in the continued development of high-power vacuum tubes. In the latter instance the objectives of this research work were referred to by the Laboratories in the following manner:

The work done under this case is an essential portion of the general radio transmission development studies that have been in progress for several years. The reasons for it and its desirability are the same as for the general radio transmission studies.

Its economic value cannot be evaluated. It will keep our fundamental vacuum power tube developments up to date as required in the transoceanic radio systems.

"Photoelectric cell" research objectives were stated by Laboratories to be as follows:

The experimental work done in the laboratories has made it possible for all the needs of the Bell System for light-sensitive devices to be met. This includes photoelectric cells for picture-transmission service, for announcer apparatus, for sound motion pictures, and for television. At the present time there is pressing need for more sensitive photoelectric cells in sound-picture work, and the lines of study which are now being followed are planned in a large part to meet this need.

The reference to this work as making it possible to meet "all Bell System needs" on these devices is something of an understatement of the scope of its accomplishments, especially in reference to sound motion picture apparatus, in which the actual "needs" of the Bell Telephone System and of its wire telephone rate payers would appear to be rather conservative in amount, and easily met. The validity

of this inference is somewhat strengthened by H. P. Charlesworth's statement in a letter to J. J. Lyng, vice president of E. R. P. I., in which it was stated in part:⁵⁰

Photoelectric studies have heretofore been charged entirely to the American Telephone & Telegraph Co. In view of the fact that a large part of our demands for information come up in connection with sound pictures and particularly since our increased program is aimed specifically at cells for sound-picture work, it now appears to us that a part of this photoelectric work is properly chargeable to the Electrical Research Products, Inc.

Despite Mr. Charlesworth's suggestion, no research expenses on this project (case No. 31967) were made against E. R. P. I., and the expense, in increasing annual amounts, continued to be charged against the American Co.

The remaining 13 major classifications of research expense billed to the American Co., as set forth in table 42, are of less total expense and considerably less individual expense than the three classifications thus far summarized. With the exception of a few comments, no further summary of the nature and amount of these subclassifications is given. Most of the classification titles are self-explanatory. "Fundamental studies" cover study of the qualities of music, speech and hearing, transmission theory, and "general" studies. Concerning transmission requirements for reproducing music (case No. 19229), Laboratories made the statement:

Origin of problem: The work originated on account of the demand for more accurate information regarding the physical properties of music and its application to the design of broadcasting circuits, sound pictures, and phonograph equipment.

Economic value: As a result of this work better apparatus for sound pictures, for phonograph reproduction, and for broadcasting equipment and circuits will be possible. This will be reflected in the increased sales of such equipment.⁵¹

Under "general" studies, the origin of "fundamental electro-optical research" was stated by Laboratories as follows:

Photoelectric studies, which constitute the larger part of the electro-optical researches, were initiated because of the importance to us of the fundamental information on electrical conduction and contact phenomena derived therefrom, and because of the rapidly growing importance of signal origination or control by light in communication systems and motion-picture apparatus. Studies of photographic and luminescence phenomena have come up in connection with television, picture transmission, and sound-picture apparatus.⁵²

"Submarine cable," the ninth in order of importance of the 16 classifications, covered research work instituted in 1929 on a trans-Atlantic telephone cable, on which the complete cost, including the laying of the cable, was estimated to be \$15,000,000. After \$2,209,989 was spent in this research work, the project was suspended. Various reasons have been assigned for suspension of work on the trans-Atlantic cable. It is apparent that the depression and the consequent falling off in business, together with the development and availability of short-wave channels for transoceanic radiotelephony, had an important bearing on the suspension of active work on the cable project. There are other things which may have had an equally important bearing. The American Co. planned to sell a half interest in the cable to the British Post Office, the Government department in charge

⁵⁰ Letter from H. P. Charlesworth, vice president of the American Telephone & Telegraph Co., to J. J. Lyng, dated October 29, 1929.

⁵¹ Of the total expense of \$137,201 on this project, \$109,199 was billed to the American Co. and \$28,002 was billed to Western.

⁵² All of the expenses of this research (case No. 22021) were billed to the American Co. and none to Western or to E. R. P. I.

of the British telephone system, which is operated by the Government. Since the cable was to carry telegraph as well as telephone messages, a storm of political and industrial protest arose in England over the participation of the British telephone system in activities directly competitive to independently financed telegraph companies, notably Imperial & International Communications, Ltd. All the above-noted expense, \$2,209,989, was billed to the American Co. and included in its total cost of rendering license contract services.⁵³

"Patent" expenses cover work described by the Laboratories as follows:

To assist the American Telephone & Telegraph Co. to secure and maintain patents in the United States upon inventions arising out of the development work of the American Telephone & Telegraph Co. and to perform all necessary work, upon request to protect the patent structure of the American Telephone & Telegraph Co. and Bell System in general.

Inclusion of research expenses in cost of furnishing telephone service.—Expenditures in connection with the Bell System's research activities carried on under the policies and pursuant to the objectives which have been described in this chapter are included by the associated companies and the American Co. in the cost of furnishing telephone service and, to the extent that these costs are recognized by regulatory authorities as proper in determining reasonable rates, it may be said that the telephone subscribers have supported the research program.

The Bell Telephone Laboratories' charges to the American Co.'s development and research department for the research activities above considered (totaling approximately \$51,000,000 for the period 1925-35), when added to the \$27,500,000 expended by the development and research department on its own account, indicate the total research expenses, of approximately \$78,000,000, over this period. The American Co. alleges it is required by the terms of its license-service contract with the associated companies to conduct these activities as a service to the associated companies.⁵⁴ Consequently, the American Co. includes the total amount of these Laboratories' research billings in the cost of license-contract services (except for very small deductions for "nonlicensee" expenses)⁵⁵, and also includes the expenses which its own development and research department may have incurred on its own behalf. Since 1934, when the greater part of the American Co.'s development and research department personnel was transferred to the Laboratories, very little research expense has been incurred by the American Co. directly.

These expenses, averaging between \$8,000,000 and \$10,000,000 per year during the last 6 years of that period, have been supported by

⁵³ The apparent loss of this considerable sum of research funds conceivably might have been avoided if the arrangements for construction of the cable had been concluded before the research effort had been carried so far. It is important to note that the expenditures for the research activities underlying this proposed Bell System competition with privately financed American cable companies (notably the Postal System) are included by the Bell System in telephone operating expenses. This aspect of Bell System's research is treated more fully in subsequent parts of this chapter.

⁵⁴ For more detailed discussion of the absence of dealing "at arm's length" in these and other contracts between the American Co. and its subsidiaries, see ch. 4 and 8.

⁵⁵ For a description of these deductions, see ch. 6.

the license-contract payments.⁶⁶ These payments are made by the associated companies to the American Co. on the basis of a stated percent of the operating gross telephone revenues.⁶⁷ Over the period 1900-35 these payments have totaled somewhat less than \$500,000.-000.⁶⁸

Significance of the Bell System's Research Policy.

The Bell System's research activities and policy have had a considerable influence upon the quality and cost of telephone service and have affected the commercial fortunes of those who have attempted to engage independently in activities in which the Bell System has preferred to exercise a dominant influence. The importance and significance of the results flowing out of these research activities have been much greater than the relative importance of the cost of those research activities when considered in relation to the total cost of operating the Bell System's wire-telephone plant. The present and potential results of these research activities are expressed in activities highly technical in character, but which do exert a controlling influence upon the type, quality, cost, and financial control over services of extreme importance to the Nation's industrial and social structure, and affect the individual interests of many who have no desire to comprehend or evaluate the highly technical aspects of the Bell System's research activities in these national services. This section seeks to present as briefly and simply as possible the significance of the Bell System's research activities, and their influence upon the control and course of development of national communication services.

Present Bell System objectives in research first are reviewed, with emphasis upon those results ordinarily not considered except in an evaluation of the long-range trend of scientific progress and the method of its commercial exploitation. The significance of the American Co.'s research policy, in relation to its general business policy and objectives, is presented in the subsequent paragraphs, by means of the quotations from the statements made by responsible Bell System executives during the last half century of Bell System growth. A subsequent paragraph considers briefly the possible results of this policy as it may affect national communication services in the future.

⁶⁶ The license-contract payments collected by the American Co. from associated companies were 4 1/4 percent of gross telephone revenues from 1901 until 1926, but the fee has been reduced several times since 1926. During the period 1900 to 1925, inclusive, license-contract payments to the American Co. were \$290,-227,968. The American Co.'s cost of making available the service for which these payments were received is not available because the company's accounting records do not afford information on this basis, except as a matter of allocation involving a large degree of personal judgment. However, the American Co. has offered, in State rate cases, its calculation of these costs for the years 1923, 1924, and 1925 of this period. On the basis of the costs thus calculated, the American Co. expended \$73,579,816 for license-contract services for which it collected \$86,244,877, or 17.2 percent more than the cost (17.2 percent of \$290,227,968 is \$49,919,210). Since reducing the license-service fee in 1926, the company has received, according to its books of record, payments (over the period 1926-36) totaling \$203,042,407, on which it alleges costs of \$274,708,706, indicating an alleged excess cost over payments of \$71,666,299.

⁶⁷ Originally described as "rental" for the telephone transmitters and receivers, to which the American Co. held the title and assumed the expense of maintenance, this fee came to be supported as a "service" contract payment rather than a rental payment, as similar instruments of fully equal qualities were available from independent telephone manufacturers, and even the American Co. began selling its own instruments outright to independent telephone companies who were not required to pay any "rental" fee for their continued use. In supporting this change of emphasis from a "rental" to a "service" basis, Vail noted that the fee was to develop and defend new patents on new apparatus, to defray the cost of fighting the so-called independent movement of competing telephone companies. In connection with this attack upon independent telephony, Vail also noted: "There is no doubt what has been done has been for the interest of the parent company, but it is a mutual reciprocal interest * * * none the less to the interest of the operating company." For complete statement of Vail on this subject, see exhibit 1951-A, appendix I.

⁶⁸ The exact amount is \$478,058,592. The total annual payments and a break-down of the annual amounts paid by each of the associated companies, are given in exhibit 1360-B, schedules 54 and 55.

Present objectives of research activities.—The company's present research activities apparently have a twofold objective: First, to advance and improve the art of wire telephony; and, second, to obtain a degree of knowledge, influence, and control in adjacent industries sufficient to protect the return upon private capital invested in its wire-telephone plant against diminution by the competition of emerging forms of communication.

The former objective is attained by a business policy which encourages the discovery or adaptation of new scientific developments in the field of wire telephony, in order that the volume of service sold at a profit may be increased through offer of a telephone service of increasing quality and convenience at a cost to the consumer which is lower, in proportion to the intrinsic value of the service to him, than the cost of other equally desirable services or products for which the consumer may desire to spend his available funds. This objective, insofar as research policy alone is concerned, is served when the company's cost of delivering telephone service has been decreased. Consideration of the degree and alacrity with which these savings are passed on to the ultimate telephone rate payer is not a part of research policy, but is inherent in other company policies, discussed elsewhere. The subsequent engineering and standardization, for Bell System use, of those products of research activity which serve to advance this first objective are discussed more fully in the chapter on engineering and standardization, covering the long process of technical activity which is required before the results of fundamental research may profitably be adapted, standardized, and manufactured in mass volume for introduction into the extensive and intricate wire-telephone plant.

The results of the second objective are less immediately apparent, but in the long run probably exert a greater effect upon company profits, and upon the type and control of national communication service, than does the first objective. It is in this second area of corporate effort that a management skill and judgment of unusual ability and keen foresight are required, for the issues involved are highly intangible in nature; the potential and actual results flowing from these early managerial decisions in this area of business policy have far-reaching and irrevocable effect, not alone upon the type, quality, and cost of national communication services, but also upon the financial control of the physical plant devoted to those services, and upon the financial return to the private capital thus invested in permanent plant.

Relation of research policy to the company's general business policy.—The management's stated objectives in this area of company policy, insofar as they may relate to its research policy, are presented below in chronological order so that they may afford some impression of the balance and foresight inherent in Bell System managerial ability over a half century of its business history, and so that the significance of Bell System research policy may become apparent.

The company's statement on its 1879 business policy gives an early and definite position to the subject of technical and scientific advance in the art of wire telephony. For this early period of corporate existence the objectives of company policy relating to technical activities have been expressed concisely in the oral arguments presented by counsel for the American Co. in its legal con-

troversy with the Western Union Telegraph Co., against whom it sought (with eventual success) to establish independent control of telephony, free from domination by the then powerful Western Union control of the telegraph industry. Referring to the Bell Co.'s struggle with the telegraph monopoly, prior to the Western Union agreement of November 1879, Bell counsel stated:

They [the participants in the 1879 contract] knew that the possibility of increase in profits depended entirely upon increased use of the telephone, which, in turn, depended entirely upon the development of apparatus necessary to make increased use possible. They knew that only a small part of any increase in profits would reach their pockets unless they controlled not only the telephone but all the apparatus essential to the business.

The possibility of profit was there. The profit could not be obtained without the telephone and the telephone patent. But the profit would never have existed without other machinery just as essential as the telephone instrument. The Bell could never have obtained its profits without the control of the patents upon the essential additional apparatus.

And they knew that the Bell could not utilize the opportunity unless it could devise and control an efficient organization and system for carrying on the business.

The Bell's policy and practice from the very beginning followed the lines which these conditions naturally suggested. It controlled the telephone after the most arduous struggle. It developed, or bought, and controlled the other essential apparatus and the patents upon it. It developed and controlled the essential business machinery. By this policy it developed the possibility of profits into a reality, and brought those profits into the Bell treasury.

Many years later (in 1901) Vail, in referring to this competition, made the significant statement.⁵⁹

The original Bell Co., in spite of the wealth, prestige, position, and power of the Western Union *at that time and without any aid from the patent holding*, succeeded in getting possession of the telephonic field. [Italics supplied.]

The early intentions of the Bell System in regard to the only other forms of electrical communication then available (wire telegraphy), lend further significance to its present research policy. In 1906, before the advent of radiotelephony, Vail indicated the objectives of the Bell System in regard to this older and rival form of communication in writing to F. P. Fish, then president of the American Co. Vail stated, in part:⁶⁰

From the very beginning of the "telephone" business, so far as I have had to do with the policy of the company, it was directed toward the ultimate absorption of the "telegraph" business—I do not remember that I was alone in this, and as I believe and understand, this policy still exists. I think Mr. Cochrane will recall a remark made by me—when the Western Union agreement was signed—to the effect that, if we were in the position I hoped we would be at the termination of the contract, that we should ask the Western Union for half of its capital stock for the privilege of continuing in business as one of our subordinate companies.

Vail also gave strong support to the emerging idea that the 4½-percent license fee collected by the American Co. from the associated companies should be emphasized less as a "rental" fee and more as a "service" charge, which subsequently was used to support the cost of the American Co.'s extensive research activities. In the summer of 1907, within a few months after his accession to the presidency of

⁵⁹ This statement was made by Vail in a letter written in 1901 (before he was brought back into the company's management) to a member of the American Co. executive committee, warning of possible danger of the Bell System's losing its control over telephony to independent telephone companies, which then were increasing rapidly in number and strength. The letter suggested: "Such things have been known as the weaker opposition absorbing the stronger original," and this warning was implemented with the above-quoted experience from the Bell Co.'s own early experiences, in which Vail had participated personally, as general manager of the early organization. For a more detailed treatment of this episode, see ch. 5.

⁶⁰ Letter from Vail to Fish, dated April 14, 1906.

the American Co., Vail wrote a long memorandum stating the reasons why associated companies should continue their payments to the American Co. for what previously had been termed "rental of instruments." In this memorandum Vail reflected the immediate attention he gave to the existence of other large "systems" and industries which might become "hostile." The relevant portions of this memorandum stated:⁶¹

The payment of 4½ percent must be regarded as a contribution toward the general expense of the business which is assumed by the parent company for the benefit of all, rather than any royalty or rental.

Consideration should be given to the strength and advantage of a community of interest, fostered and supported by a strong central organization, to the advantage of exclusive connection, sacred and inviolable boundary lines, not only from the parent but from surrounding companies, to the support of the weaker and more vigorously attacked companies against the independent movement.

There is no doubt that what has been done has been for the interest of the parent company, but it is a mutual reciprocal interest, it is in the interest of co-operation, but none the less to the interest of the operating company and in greater ratio to those companies in which the parent company has little or no investment.

Consideration should be given for the expense and care to the parent company of the development of special fields establishing relationship with certain lines of industry which might through indifference, not to say hostility, make difficulties without end.

There are already built up and building in this country vast systems of business extending over many operating companies' territories. Is there any advantage in having some central aid in dealing with such systems?

In 1909, John J. Carty, the chief engineer appointed by Vail in 1907, made the statement, previously quoted,⁶² that the possibility of developing a "telephone repeater might put us in a position of control with respect to the art of wireless telephony should it turn out to be a factor of importance." In 1919 radio-research activities were given additional impetus, following the development of important radio devices by independent organizations, notably the General Electric Co.⁶³ As previously stated in this chapter,⁶⁴ the "comprehensive wireless program" then instituted was adopted "in order to keep ahead of others in the wireless field and not lose out in the matter of patents." At the same time Gherardi, who made the statements just quoted, also said:⁶⁵

The position of this company with reference to the communication field, especially telephonic, is such that we cannot afford to leave the development of this art to others.

In 1920, after the American Co. had its first agreement with General Electric, in which their respective patents were pooled and certain of the rights were transferred to the Radio Corporation of America,⁶⁶ the value of the Bell System's early radio research was set forth by Jewett in a memorandum to Carty, in which he stated:⁶⁷

⁶¹ Memorandum by Vail dated "Summer, 1907," annotated "Corrected final copy," found in miscellaneous files of E. J. Hall, American Co. vice president. The complete memorandum is reproduced in exhibit 1951-A, appendix I.

⁶² See p. 279, *supra*.

⁶³ Further details on this aspect of the American Co.'s relative patent strength in the radio field are contained in ch. 8.

⁶⁴ See p. 280, *supra*.

⁶⁵ Memorandum, Gherardi to President Thayer, dated May 17, 1919, entitled, "Wireless Telephony." In 1932 the Bell System recognized the continued existence of radio's competitive threat to the fixed-capital investment in wire-telephone plant, as is indicated by Blackwell's statement: "It is interesting to note that from the engineering standpoint, radio seems now to have a better chance than at any previous time to successfully compete with wires for long-distance telephony. This is because of the advent of ultra short waves."

⁶⁶ For greater detail on these agreements, see ch. 8.

⁶⁷ See exhibit 1951-B, appendix E-1, sheet 31.

As I look back on it, it seems to me that this enlarged and enhanced position (in radio research) played no small part in enabling us to reach our present satisfactory understanding with the General Electric Co. and the Radio Corporation of America and that if we never derive any other benefit from our work than that which follows the safe-guarding of our wire interests we can look upon the time and money as having been returned to us many times over. (Parenthetical clause supplied.)

Jewett further added to this statement, concerning the Bell System's patent bargaining position in relation with those who had developed radio patents independently, by statements made in 1932, referring to the same subject, in which he said, in part:

The ability of the company to negotiate in connection with patent interchanges has been based considerably on the result of the work on radio.

As it was, the patent position to which we had attained was such what even the outside holders of fundamental patents, essentially of interest to them in connection with the development of radio in fields not of primary concern to the Bell System, could not develop these fields without securing rights under our patents.⁶⁶

In a 1923 confidential radio conference held between executives of the American Co. and of its subsidiary companies, the American Co.'s general patent attorney, Folk, made a statement, of which the following is an excerpt: ⁶⁹

I believe the strength of our position in the radio field and in the carrier-current wire field is largely due to our very strong patent situation, so that it has been absolutely impossible for the wireless companies to operate without getting licenses from us. We can say that though we have weathered the storm to a large extent, there may be other storms where we will need our patent protection. I have in mind the possibility of various companies throughout the country becoming familiarized with wireless apparatus, and attempting to use such apparatus in wire broadcasting or in leased-wire telegraphy or telephony.

A recent restatement of those objectives of company policy, in relation to the Bell System's sound motion-picture activities, is afforded by J. E. Otterson, the Bell System executive in charge of those activities which resulted from commercial exploitation of the devices resulting from fundamental research activities carried on by the American Co.⁷⁰ This statement is couched in terms leaving no doubt as to the precise intent, though it merely restates and amplifies, for numerous company research activities including sound motion pictures, the statements previously quoted on telegraph and radio, covering the period from 1879 to date. Otterson said: ⁷¹

A primary purpose of the American Telephone & Telegraph Co. is the defense and maintenance of its position in the telephone field in the United States. Undertakings and policies must be made to conform to the accomplishment of this purpose.

The American Telephone & Telegraph Co. is surrounded by potentially competitive interests which may in some manner or degree intrude upon the telephone field.

The problem is to prevent this intrusion.

⁶⁶ This statement was made by Jewett in his defense of the radio research expenses incurred by the American Co., which are included in operating expense by the Bell System companies, and were under question in the *Chicago Rate case*. Jewett pointed out that the patent rights obtained in return from General Electric and others were necessary to the uninhibited development of its wire telephone service. He further gave his opinion, but offered no evidence in substantiation, that the cost of Bell System research in radio was less than would have been the cost of purchasing the patent rights from others, which their dominant radio patent position allowed them to demand from those engaged independently in the radio industry. See exhibit 1951-B, appendix E-1, sheet 21.

⁶⁹ From bound volume of Notes of Radio Conference, New York City, February 26-March 2, 1923, p. 450. Folk defended the American Co.'s use of its radio patents for "defensive purposes," pointing out that others might use them against a public-service corporation, but such use by the latter resulted in a "cry of monopoly."

⁷⁰ It is important to note in this connection that the Bell System's commercial exploitation of the field of sound motion pictures was in direct competition with the efforts of other companies which had developed and were attempting to sell and install sound motion-picture equipment.

⁷¹ Memorandum by J. E. Otterson, dated January 13, 1927.

These interests are characterized by the General Electric Co. representing the power and light group, the Radio Corporation of America representing the radio group, the Western Union Telegraph Co. representing the telegraph group, and the International Telephone & Telegraph Co. representing foreign telephone interests. Other miscellaneous interests which may not fall in any one of those groups may appear as potential competitors at any time but the consideration can be confined to these four groups as illustrative of the whole.

Each of these large interests is engaged in development and research that is productive of results which have an application outside of their direct and exclusive field. Indicative of these activities we have between the American Telephone & Telegraph Co. and the Radio Corporation such things as the vitaphone, phonograph, broadcasting by wire, point-to-point wireless, wireless communication with moving objects.

Between the American Telephone & Telegraph Co. and the General Electric Co.: Carrier current on power lines, communication with trains, train dispatching, switch control, Graybar activities.

Between the American Telephone & Telegraph Co. and the Western Union Co.: Leased wire service, submarine telegraph, submarine telephone, trans-Atlantic wireless, terminal apparatus.

Between American Telephone & Telegraph Co. and International Telephone & Telegraph Co.: Vitaphone, phonograph, aids to hearing, pictures by wire, permalloy, submarine cable.

No effort has been made to develop a complete list of these activities but only a sufficient number to illustrate their character.

In the case of each of these activities the engineering in the major field extends beyond that field and overlaps upon the engineering of another major field and sets up a competitive condition in the "no-man's land" lying between.

These competitive activities furnish at once an outlet and stimulus for engineering and commercial activities, a contact with competitive engineering and commercial activities, a source of knowledge of competitive activities and a test of patent values helpful to the strength of the patent situation in the major field.

The regulation of the relationship between two such large interests as the American Telephone & Telegraph Co. and the General Electric Co. and the prevention of invasion of their respective fields is accomplished by mutual adjustment within "no man's land" where the offensive of the parties as related to these competitive activities is recognized as a natural defense against invasion of the major fields. Licenses, rights, opportunities, and privileges in connection with these competitive activities are traded off against each other and interchanged in such manner as to create a proper balance and satisfactory relationship between the parties in the major fields.

The contract between the American Telephone & Telegraph Co. and the General Electric Co. is an example of the character of arrangement that may develop out of an effort on the part of two large interests to avoid an invasion of their respective fields and a destructive conflict of interests. It was through trading off rights in connection with these competitive activities that an adjustment between the two interests was reached and the two major fields left intact.

So, as a result of negotiation or litigation it might be necessary for either party to submit to a minor invasion of its major field and to trade off some portion of it in the interest of protecting the balance.

It seems obvious that the best defense is to continue activities in "no man's land" and to maintain such strong engineering, patent, and commercial situation in connection with these competitive activities as to always have something to trade against the accomplishment of other parties.

If the American Telephone & Telegraph Co. abandons its activity in the commercial competitive field and other potentially competitive interests continue their activities, it means that they will carry their offensive right up to the wall of our defense and our trading must be in our major field against activities in their outlying commercial fields. The nearer the trading can be carried to the major field of our competitors the more advantageous trading position we are in.

In the case of the International Co. we must contemplate a period 15 years from now when they have grown in strength and independence and no longer feel the need of American Telephone & Telegraph Co. support and assistance and, flushed with success in their own field, they are looking for other worlds to conquer. At such a time we would find them in quite a different mood as regards an extension of our contract with them.

This indicates the desirability of our retaining control over the activities that lie between our respective fields.

For example, our position in the submarine telegraph and telephone cable fields and our control over transoceanic communication may at a future date prove to be an effective instrument in regulating the relationship with the International.

Items of a more commercial character such as the phonograph and vitaphone afford us an opportunity meanwhile to develop an income from commercial sources that will support the organization necessary to the maintenance and defense of our position in the foreign field as an outpost of our domestic situation.

On the whole, it seems to be essential to the accomplishment of the American Telephone & Telegraph Co.'s primary purpose of the defensive protection of its dominating position in the domestic telephone field that it shall maintain an active offensive in the "no-man's land" lying between it and potentially competitive interests.

Subsequently, Otterson referred to the desirability of liquidating its sound motion-picture competitor (Radio Corporation of America) and thus acquiring exclusive control of this profitable new field. Later in 1927, speaking of the desirability of monopolizing the new field of sound motion pictures, Otterson stated:⁷²

In the talking motion-picture field, they (R. C. A.) are competing very actively with us at present, as you know, to develop an affiliation with the large motion-picture producers and competition between us will doubtless ultimately result in a situation highly favorable to the motion-picture interests and opposed to our own. This is an extensive and highly profitable field and it is quite worth our while to go a long way toward making it practically an exclusive field. I believe that we could justify, from a commercial standpoint, paying a large price for the liquidation of the Radio Corporation for this purpose alone.

Summary.

Although the Bell System now enjoys a controlling position in the field of wire telephony, it is surrounded by other industrial fields or interests which may invade this wire telephone monopoly through the development of newer forms of communication tending to reduce the value of the Bell System's fixed capital investment in a particular type of communication plant. The American Co.'s research policy underlies its defense against this threatened invasion. The strong financial resources of the Bell System, including the revenues derived annually from customers, have been and are held available by the American Co. to insure an aggressive program of technical development and scientific research. The art of communication by telephone has been advanced and expanded so strongly by these resources that it has transcended the field of the original telephone patent, and the Bell System has become a powerful influence in the adjacent fields of radio, motion pictures, telegraphy, and television.

The advances and improvements in the art of telephony, resulting from the knowledge derived through the research program carried on in some form or other since the very beginning of telephony, not only served to create and continue the profitable character of the enterprise, but have allowed the enterprise to furnish the American public more and increasingly better telephone service at such prices as have allowed the market for telephone service to broaden to a greater extent than in almost any other nation in the world, so that today the United States probably uses more telephone service per capita and per dollar of business done, at a less proportionate cost, than any other nation.

A high degree of coincidence exists between the date of establishment of the Bell System's present scope of fundamental research and the advent of those vacuum-tube inventions which lifted the

⁷² Memorandum from J. E. Otterson to E. S. Bloom, dated April 29, 1927.

science of "wireless" almost bodily out of its previous limitations and placed it well within the field of the Bell System's telephone monopoly, through the rise of radiotelephony. In addition to the immediate and more widely publicized objectives of the research and development programs instituted at that time (to increase quality and reduce the cost to the company of delivering telephone service), the Bell System's research policy has included a further objective, the protection and continued stability of return upon the private capital invested in its own form of electrical communication, the wire telephone.

In pursuit of that objective the Bell System has engaged aggressively in fields as far removed from wire telephony as motion pictures; it has expended large sums on research in radio, over which it sought to exercise a dominant influence; it is now conducting research in newer forms of communication, including television and ultra-short-wave radio, which may compete directly with the service offered by the Bell System; its investment interest in a fixed plant designed for wire-telephone communication inevitably affects its attitude toward the development and commercial exploitation of alternative forms of communication; through its research policies, reinforced by its patent policies, the Bell System seeks to attain a position of influence or control over these newly developing forms of competition.

Aggressive Bell System research has contributed to the production of an exceedingly valuable national wire-telephone service. This research should be encouraged strongly in the public interest, and no part of the foregoing chapter is to be construed as a criticism of research as such, or even as a criticism of the incidental following up of discoveries which may arise in connection with purely telephonic research, and making these discoveries available for the benefit of society.

CHAPTER 8

PATENTS

The communication requirements of a nation provide various opportunities for profit-making exploitations. The acquisition of the original Bell patents provided means for controlling that portion of this profit-making opportunity represented by the new means of voice communication. For this purpose the Bell System has created a Nation-wide system for rendering telephone communication service and has also dominated ¹ the field of manufacture and sale of the instrumentalities by which the services are rendered. One of the principal means employed for achieving these objectives and for protecting the Bell System in its occupation of the field is, and has been, the ownership and control of patents relating to the telephone field and to potentially competitive fields which hold the threat of encroachment upon telephony.²

This chapter deals with the policies and practices employed by the Bell System with respect to patents, and the manner and extent to which these policies and practices have served to establish and maintain the system's dominant position in the telephone communications field.

Policies Adopted to Achieve the Patent Objectives of the Bell System.

The protection which patents render to the Bell System has been effectuated by an unremitting policy of patent acquisition, both through the purchase of patents and patent rights of particular importance and the securing to the greatest possible extent of patents upon technical developments made within the Bell System; by the centralization in the American Co. of authority over all Bell System patents relating to telephony; by a licensing policy so designed as to obtain the maximum rights under the patents of others and to grant such restricted licenses under its own patents as not to endanger the position of the Bell System in the field of telephony; and, in the years prior to 1908, by the institution of numerous patent infringement suits against competitors in the telephone field. Since 1908, it has been the policy of the parent company not to engage in patent litigation but to protect its patents when necessary through suits brought by its subsidiaries.

Acquisition.—Of the total number of patents owned, less than half have been used constructively. Of the remainder, which constitutes a majority of the total patents owned, a great many cover alternatives which have no present use. The policy of extensive and unremitting acquisition of exclusive patent rights, in conjunction with a restrictive licensing policy, effectively reserves or has reserved to the Bell

¹ See par. 1 of the preface, *supra*, for statistics showing the extent to which the dominant position of the Bell System in the telephone communications field in the United States approaches that of a national monopoly.

² For details, see exhibits 1989 and 2110.

System a dominant position in domestic public service in telephony and certain related fields. As of today, the major fields in which a dominant position is reserved to the Bell System through its patents are: Long-distance wire telephony, including broadcasting networks (program transmission); public-service radiotelephony, both domestic and transoceanic; and public-service telephony by wire carrier systems. The dominant position in these fields occupied by the Bell System includes not only the service but also the manufacture and sale of the instrumentalities by which such services are rendered.

Licensing.—In securing licenses under the patents of others, the Bell System has at all times attempted to acquire exclusive rights to the telephone and other fields in which it is primarily interested. The Bell System has been reluctant to license others under its patents. An outstanding characteristic of the licenses which are granted is that the grant in substantially all instances is to specific fields or to specific uses rather than under specific patents. These fields and uses are so defined that the licenses do not threaten the primary interests of the Bell System. Where licenses are exchanged, those granted are limited either to nontelephone fields or so restricted as not to permit others to supply the needs of the operating licensee companies.

Infringement suits.—In the field of telephony, no patent infringement suits have been instituted by the Bell System since 1908. The more important of these early suits have been mentioned in chapter 5 of this report. In recent years, in the sound motion-picture field, patent infringement suits have been instituted by the Western Electric Co. and E. R. P. I. The American Co. has also been joined as a necessary party in infringement suits instituted by the Radio Corporation of America on Bell System patents, in which the former acquired rights under the cross-licensing agreements. However, since no Bell System policy is indicated thereby, these suits will not be discussed in this chapter.

Centralization of control in the parent company.—In the assurance of its dominance in the rendering of telephone services and in the manufacture and sale of instrumentalities to the operating licensee companies of the Bell System, contractual relationships between the various companies of the Bell System are so maintained that complete control of patents applicable to telephony resides in the American Co. Under the license-service contracts, the operating licensees receive only the right to use patents and patented methods and instrumentalities made available to them by the American Co. Under the contract of 1882 between the American Bell Telephone Co.³ and the Western Electric Co., and its 1908 revision, which are still in force, the Western Electric Co. has obtained the exclusive right, under Bell System patents relating to telephony, to manufacture and sell to the operating licensees, to the public, and for export, subject to such restrictions as the American Co. may from time to time impose. These contractual arrangements permit the American Co. to maintain full control over Bell System patents in the field of telephony and compel the operating licensees to secure from the Western Electric Co., if secured at all, anything covered by Bell System patents.

³ Predecessor of the American Telephone & Telegraph Co.

Historical Development and Application of Patent Policies and Practices.

The basic telephone patent⁴ in the United States was issued to Alexander Graham Bell on March 7, 1876. This patent was fundamental to the new art of telephony and covered every electrical method or process of speaking or transmitting conversation between any two places. As later construed by the courts, it was the broad patent underlying the entire telephone industry in the United States.⁵

A second Bell patent⁶ was issued on January 30, 1877, and covered certain broad structural improvements of the magneto telephone. It described an instrument so highly developed that it was essentially the same instrument as our present telephone receivers, although at that time it also served in the capacity of a transmitter as well.

These two patents were owned successively by the Bell Telephone Association, by the Bell Telephone Co., National Bell Telephone Co., and by the American Bell Telephone Co.

One of the first things that was fully developed in the minds of Bell and his associates was the necessity for occupying the field, and protecting the business as completely as possible by securing patents on all developments made within the system and by purchasing from others all patents that would promote this objective. The successful prosecution of this policy would minimize the danger arising from the possibility that a court decision might invalidate the original Bell patents. From 1879 forward, the acquisition of patents was one of the most consistent practices of the Bell System.

The first major addition to the Bell System's patent holdings came with the settlement of the patent suit of the Bell Telephone Co., et al, against Peter A. Dowd, a licensee of a subsidiary of the Western Union Telegraph Co. Under the settlement effected on November 10, 1879, the telegraph company acquiesced in the original inventorship of Bell, admitted for itself and associates that the Bell Telephone Co. patents were good and valid and agreed to retire from the public telephone business for a period of 17 years. The telegraph company further agreed to transfer its telephones and telephone exchanges, and the telephone inventions it then owned or should acquire over the period of the contract, to the Bell Co. and its licensees.

From the standpoint of existing and potential patent control the Western Union settlement was most advantageous to the Bell Co. It added to the 24 patents then owned by the Bell Co. 42 patents and applications then owned by the Western Union covering improvements on the telephone itself and useful devices in the field of telephonic apparatus. Over the 17-year period of the agreement the Bell System obtained exclusive rights in the telephone field under 87 Western Union patents.

The second major acquisition of patent rights by the Bell System came with the contract of February 6, 1882, between the American Bell Telephone Co. and the Western Electric Co. The immediate predecessor of the latter had been allied with the Western Union Telegraph Co. prior to its withdrawal from the telephone business in 1879, and had acquired a substantial patent position as a result of its

⁴ United States patent No. 174,465.

⁵ *The Telephone cases*, 126 U. S. 1.

⁶ United States patent No. 186,787.

activities in developing and supplying telephone apparatus to the licensees of the Western Union Co. and others, including Bell licensees. The patent position of the Western Electric Co., resulting from its acquisition of the assets of the Western Electric Manufacturing Co., was one of the major considerations which prompted entry of the American Bell Telephone Co. into the agreement. The professed purpose of this contract was to make available to the American Bell Co. and its licensees an adequate supply of high-quality telephones and telephonic appliances. The terms of the contract, however, were such as to give the American Bell Co. the control of the patents of both companies, and to assure the Western Electric Co. a monopoly in the manufacture and sale of patented equipment to Bell licensees. Moreover, the benefits of Western Electric patents and manufactured products were by this contract denied to nonlicensee telephone manufacturing and operating companies within the United States.

The Bell Co. secured patents of its employees and of the employees of its subsidiary and licensee companies. The patents and inventions were turned over to the Bell Co. and classified as "telephone" or "telephonic appliances." Lists of "telephonic appliances" patents were submitted at intervals to the Western Electric Co., and, if accepted, were assigned to the latter. Similarly, assignments of "telephone" patents were made by Western to the Bell Co. Transfers of patents between the companies were made on a "cost" basis, the cost including the inventor's fee, usually \$50, and the expense of obtaining the patent. In most instances it did not include any development expense which the originating company might have incurred.

All major independent inventions in telephony, with the one exception of the automatic exchange, were secured by the Bell Co. Concerning the early patent acquisition policies, Mr. Thomas D. Lockwood, general patent attorney for the Bell System from 1879 to 1918, testified in 1916:^a

It has been the practice of the company, watching the history of the art, * * * to select everything in the way of conductors, apparatus, or telephones that it has seemed would be of benefit to the system at large, and either to buy them outright, which was nearly always done in the first instance, or else to buy sufficient rights under them to enable the American Co. and its system to carry on the telephone business with high efficiency everywhere.

Over the period 1876 to 1912 no instance has been found in which the American Bell Co. and its successor, the American Co., failed to secure and hold less than exclusive rights in the telephone field under any patents licensed or assigned to them. Over the same period the Bell System granted no licenses to others in the telephone field. The purchases described by Mr. Lockwood were of a nature, therefore, to assist in achieving the dual effect of an efficient operation of the business and of limiting the scope of the competition in the telephone field.

The two fundamental Bell patents expired in the years 1893 and 1894, respectively, and despite the imposing array of patents, some 900 or so, held at that time by the Bell System, an extensive independent telephone operating and manufacturing industry developed

^a For definitions of "telephone" and "telephonic appliance," see pp. 239-240 of this report.

^b Abstract of Record of the Appellate Court for the State of Illinois, First District, Term No. 34, General 2364, in the case of *Wm. A. Read et al. v. Central Union Telephone Co.* In equity No. 299689, Transcript of Record, vol. VI, p. 3611.

rapidly thereafter. Although patent infringement suits were vigorously prosecuted by the Bell System, mainly on the "telephonic appliance" patents, and the independents were thus held in check for a few years, it became increasingly evident that patents would be unable to preserve the monopoly of the Bell System as to exchange telephone systems. As a result of the development of alternatives by independents, and the expiration and invalidation of Bell System patents, the exclusive occupancy of the exchange telephone field was lost to the Bell System.

In a memorandum prepared by Mr. Lockwood in 1907⁹ is found a sweeping admission that Bell System patents pertaining to line and protective apparatus; substations, their apparatus and arrangements; and the central office, its switchboard and auxiliary appliances, were of value only for protecting the specific devices covered by said patents; and that these patents could not be used to prevent the manufacture and use of similar devices. This admission was followed by a marked change in policy.

In the annual report of the directors of the American Co. to its stockholders for the year ending December 31, 1907, at page 11, it is stated:

The policy of our company in the past has been to lease telephones, and to allow the Western Electric Co. to sell only apparatus to our licensees. Believing that the best interests of all would be advanced by the general use of standard telephonic apparatus, after consultation with, and with the approval of, our associated and licensed companies, we authorized the Western Electric Co. to sell both telephones and telephonic apparatus to all applicants. While the time has been too short to show positively the effect of this policy, the indications are that the benefits direct and indirect will be large, particularly in the development of unoccupied territory in connection with the Bell System.

As a necessary concomitant to this change in sales policy, the contract of 1882, between the American Bell Telephone Co. and the Western Electric Co., was amended on April 8, 1908, by a memorandum agreement, which permitted the Western Electric Co. to manufacture and sell "telephones" and "telephonic appliances" to non-licensees subject to such restrictions as the American Bell Co. might from time to time impose. The change in sales policy and the 1908 amendment to the 1882 contract indicated clearly that the Bell Co. could no longer maintain a dominant position in the manually operated local exchange field through patents alone. Thereafter the major objectives with regard to patents were the complete control of the long-distance field and the control insofar as possible, of those methods and instrumentalities which would give the Bell System a competitive advantage in the exchange telephone field. The methods used to attain these objectives were the same as those employed to further the initial objectives of the Bell System, namely, an aggressive policy of patent acquisition and the refusal to grant licenses to independents in the telephone field where such licenses might block the objectives sought.

Although in 1907 Mr. Lockwood freely admitted the early policy of patent acquisition for the purpose of monopolizing telephony, the tenor of his public statements underwent a change subsequent to the management reorganization in that year under Mr. Vail and the new public relations policies adopted by the new management.¹⁰ In

⁹ See exhibit 1989, pp. 28-31.

¹⁰ See ch. 4, p. 137.

1916 Mr. Lockwood testified that current patent acquisitions were made for the purpose of making inventions available for the use and expansion of the telephone system and were not designed to prevent others from entering the field.¹¹

Notwithstanding Mr. Lockwood's public declaration that the Bell System's only objective as to patents was to make the inventions available for use in the system, the Bell System was adhering strictly to its policy of securing, through patents, complete or practical monopolies in the fields of its primary interest. As an aid to this objective new routines were instituted in 1912 for assuring its monopoly in the long-distance field and to increase its hold upon repeaters, automatic telephone exchanges, and other important lines of development. These routines provided for the development of all practicable forms of alternative apparatus to the point only where the development would support patents, and in the vigorous prosecution of patent applications covering these developments.¹²

The Bell System continued to make every effort to avail itself of every important independent invention in the telephone field which could be acquired. The Bell System secured patent rights under substantially all independent developments of known importance to telephony. Representative examples of these acquisitions and the licensing agreements which the Bell System has been able to make in the communications field will be referred to in the ensuing discussion of policies and practices related to specific developments.

In addition to the control of long-distance telephony and certain related developments, the Bell System has, since the expiration of the basic Bell patents, controlled fundamental patents on certain types of subscriber-station apparatus and patents essential to the simultaneous operation of telephony and telegraphy over the same conductors, and has achieved an increasing control of important patents relating to automatic telephone exchanges.

Although the primary purpose, that of securing as complete a monopoly as possible through patents, was present with each of the above fields of development (local and long-distance telephony) there existed variations in the policies and practices with respect to different types of equipment by which the Bell System sought to achieve its purpose. For this reason separate consideration will be given to the practices respecting each development.

Local telephony.—As recognized by Mr. Lockwood in 1907, it has since that date been impossible for the American Co. and the Western Electric Co. to secure through patents a monopoly of local or exchange telephony. It has, however, owned important patents relating to automatic telephone exchanges and to certain circuits and component parts of station apparatus.

(1) Station apparatus: Complete patent control of a type of station circuit, known as the antisidetone circuit, was held by the Bell and American Cos. from 1890, when the fundamental patent¹³ was purchased, until 1935. This patent was augmented at intervals by improvement patents taken out on developments by Bell engineers. Between 1904 and 1906 G. A. Campbell, of the American Co., proved mathematically that an antisidetone circuit could be made which was

¹¹ See suit of *Wm. A. Read et al. v. Central Union Telephone Co.*, supra, vol. VI, p. 3743.

¹² See ch. 7.

¹³ United States patent No. 329,956 (1885). An antisidetone circuit reduces or eliminates sounds produced in the receiver by the local transmitter.

as efficient electrically as the standard Western Electric circuit then in use. Despite acknowledgment by Bell System engineers and officials of the superiority of the antisidetone circuit under certain conditions, no substantial development work was undertaken until about 1916. At this time patents were applied for on several alternative circuits. These were issued in 1918.¹⁴ Although Dr. Campbell's mathematical analysis was verified experimentally, and antisidetone circuits were in use in the Bell System to a limited extent, principally by operators, they were not standardized for subscribers' use until 1934, and not extensively used in subscribers' sets or supplied to the general public, to any large extent, until recently.

In 1934 the American Co. submitted information to the effect that the standard Western Electric hand telephone set was protected by 26 patents, among which were two of the Campbell antisidetone circuit patents. Three of the patents were not, in the opinion of Commission engineers, applicable to the set, but this does not alter the fact that every detail of the set was fully protected by patents. Since that time certain of the patents have expired, and improvements and changes have been introduced which have rendered others inapplicable. All improvements are, or no doubt will be, protected by patents so that the present hand telephone set will be thoroughly covered.

The American Co., with minor exceptions, has not granted licenses under its telephone-station patents to persons outside of the Bell System, nor is it licensed under independent patents of this type. Since 1908 the Western Electric Co. has, however, sold patented station apparatus for use outside of the Bell System.

(2) Automatic telephone exchanges: As stated heretofore, the automatic-exchange patents were the one outstanding exception to the Bell System's record of securing all telephone patents of major importance during its early history.

Anticipating competition upon the expiration of the fundamental Bell patents, the Strowger Automatic Co. of Chicago, in 1892, acquired control of important patents, including the basic Connolly and McTighe patent,¹⁵ relating to automatic exchanges. By 1895 a successful automatic exchange was in operation in La Porte, Ind. Mr. Lockwood at this time expressed the opinion that although the manual exchange was superior, some arrangement should be made with the Strowger Co. whereby automatic exchanges could be supplied to communities which demanded them. No arrangement was made. In 1897 the Strowger Co. installed an automatic system in Augusta, Ga., in direct opposition to the local Bell Co. This exchange had 300 working lines and an ultimate capacity of 1,000 lines, and represented a step from small-scale operation to a comparatively large installation.

The Bell System at about this time, 1897, began a survey of the patent field in connection with automatic exchanges, and many patents were examined and rejected. In 1902 Mr. Lockwood suggested the acquisition of the Hay and Parsons patent, even though of the opinion that the patent was of doubtful validity. At about the same time three important patents were recommended for purchase by Mr. Lockwood and were subsequently purchased. The

¹⁴ United States patents Nos. 1,254,471-1,254,476.

¹⁵ United States patent No. 222,458.

stated reasons for acquiring these patent rights were the freedom to use the inventions; the ability, if disposed, to challenge infringers; and to better the Bell System's strategic position in the event that it should desire to assimilate or participate in the interests of automatic exchange companies.

Beginning in 1899 the Western Electric Co. experimented with automatic and semiautomatic telephone exchanges, and by 1911 the latter system had reached such a stage of development that it was desirable to make a trial installation. It thus became imperative to secure such patent rights as would give freedom to proceed in the desired manner.

In 1911 H. B. Thayer, then a vice president of the American Co., outlined a plan for the formation of a patent holding company, a subsidiary of the Western Electric Co., to which would be assigned all the important groups of domestic patents, both Bell and independent, relating to automatic and semiautomatic exchanges. In return for the assignment of patents, each company was to receive a proportionate share of the preferred stock and nonexclusive licenses under all patents. This plan was abandoned in favor of the purchase of important patent groups when it was shown that all of the participating companies could duplicate and sell exactly the apparatus that the Bell companies were to develop and put into use.

In the same year, 1911, the Western Electric Co. purchased all patent rights from the Lorimer-Lundquist Co. This company had developed an automatic telephone system that was applicable to large exchanges and had been granted patents that were essential to the operation of large automatic exchanges. The ownership of this important group of patents relating to automatic exchange telephony greatly improved the bargaining position of the Western Electric Co. with the owners of other important automatic exchange patents and greatly assisted the Western Electric Co. in its ultimate ability to provide the Bell System with automatic equipment suitable for use in large multi-office metropolitan areas. In 1913 the Western Electric Co. purchased a group of automatic exchange patents and patent applications of basic importance from the insolvent American Automatic Telephone Co.

In addition to securing patents on its own developments and the purchase of important groups of patents from independent companies and persons, the Western Electric Co., during the years 1912 to 1916, entered into cross-licensing agreements with the two important manufacturers of automatic apparatus, the North Electric Co. and the Automatic Electric Co., and by 1923 had secured agreements as to automatic exchange patents with all important independent telephone manufacturers.¹⁶ The agreements were secured by the payment of large sums of money, and the patent license provisions of these agreements were particularly favorable to the Western Electric Co.¹⁷ These agreements have been extended from time to time, and under them the Western Electric Co. was and is free to manufacture and sell to the operating licensee companies all types of automatic and semiautomatic systems excepting exact copies of certain independent systems and apparatus. On the other hand, the independent manufacturers are limited as to the size or type of apparatus and the extent

¹⁶ See exhibits 1981-A to 1981-F, inclusive, and 1990 and 1991.

¹⁷ See ch. 5.

of improvements which may be made thereto. The director automatic system, developed in 1922 by the employees of the Automatic Electric Co. and its affiliates, is an example of an independent development dominated by Bell System patents, and which has been used commercially neither by the Bell System nor by independents in the United States. While affording freedom in the adoption of any type of automatic telephone exchange by the Bell System, these agreements prohibit any attempt on the part of independents to manufacture and sell directly to the operating licensee companies automatic exchange apparatus capable of meeting their needs.

Patent reports¹⁸ that have been made from time to time by the personnel of the Bell System show the extent to which the development, acquisition, and licensing policies have accorded to the Bell System the freedom to adopt automatic telephone exchanges without fear of patent complications.

Fundamental patent rights to the mechanically operated rotary and panel switches were acquired in 1911 by the purchase of the Lorimer-Lundquist group of patents. After 1913, concurrently with the continuing development of panel type switches and systems, the Bell System was developing two other major types of switches, viz., the crossbar switch and the shelf-type switch. Improvements and alternative structures were also being made to the Strowger switch used by the Automatic Electric Co. All of these switches are alternative types and two or more of the types may be used for different purposes in the same system. The panel and Strowger switches are the types principally employed at present. Crossbar switches are now being installed on a commercial basis and it is anticipated by Bell System officials that they will largely supersede the panel and Strowger types. However, those to be employed can comprise but a few of the many modifications of crossbar switches that are protected by Bell System patents, and as a result many alternative modifications will not be used. No shelf-type and rotary systems have ever been used commercially in the Bell System, but rotary systems have been employed to a large extent by telephone systems operating in Europe.

In response to certain requests by the Commission the American Co. submitted detailed information concerning its patents as of December 31, 1934. A study of certain classes of patents considered by the investigator to be representative of those applicable to automatic telephony shows that the Bell System owned 1,030 patents or 45.3 percent of all patents in the selected classes, and used 32.9 percent of the patents owned. Other than under the license exchange agreements with other manufacturers of automatic telephone apparatus, the Western Electric Co. does not grant licenses in this field.

No litigation on automatic telephone patents has ever been instituted either by or against the Bell System.

Long-distance telephony.—The Bell System became firmly entrenched in both the exchange and long-distance telephone fields during the existence of the fundamental Bell patents. As a result of its policy of unremitting patent acquisition the Bell System, upon the expiration of the Bell patents in 1893 and 1894, held many patents which were absolutely essential to, or resulted in great savings in, the rendering of long-distance telephone service. Typical of these were

¹⁸ See Bell System patent reports of 1913, 1920, and 1925, exhibits 1962, 1965, and 1966, respectively.

patents on transposition in open wire transmission lines, phantom circuits, and protection apparatus.

The technical history of long-distance telephony from 1900 to date is a reflection of the development and application of two instrumentalities, loading and repeaters, their associated apparatus and auxiliaries, and of the offspring of vacuum-tube developments, carrier and radio. The control of these instrumentalities permitted the rendering of an adequate long-distance telephone service, and the subsequent growth and expansion of the service upon a Nation-wide basis, under control by the Bell System.

(1) Loading: In 1900 the Bell System acquired the rights to the Pupin loading coil and loaded-circuit inventions, which were essential to the operation of long-distance circuits. In this particular field the Bell System, through its ownership of the Pupin patents, started out with a patent situation as strong as that which it originally held in the broader art of telephony under the fundamental Bell patents. The Pupin patents obtained were absolutely controlling as to loaded circuits until 1917, when the two fundamental patents¹⁹ on loading expired. This control was extended until 1921 by a broad patent²⁰ to Pupin on the loading coil itself. The fundamental loading patents were augmented by numerous patents arising from developments within the Bell System, such as those on phantom loading, necessary types of loading coils, the closely allied developments on duplex cable, and development of high-permeability materials for loading coil cores which greatly increased their efficiency and economy. The issuance of these patents occurred over a period of several years, so that absolute control over the application of practicable loading methods and instrumentalities was not lost until 1935. Even today, the Bell System holds important loading patents which yield decided advantages.

The Bell System does not grant licenses on loading patents to persons outside its system. Since 1907, the Western Electric Co. has had the exclusive manufacture and sale of loading coils to the operating licensee companies of the Bell System. In 1926 the right to lease these coils to connecting telephone companies was extended to the operating licensees under certain conditions. Under a release dated March 9, 1937,²¹ the American Co. now permits the Western Electric Co. to sell loading coils embodying Bell-owned patents to connecting telephone companies and to companies not rendering a public telephone service.

No patent litigation involving the Bell System has been instituted on loading systems or loading coils.

(2) Repeaters and related instrumentalities: Beginning about 1900, the Bell System achieved an absolute control of the telephone repeater art. The first practical repeater was the mechanical repeater invented by H. E. Shreeve of the Western Electric Co. This had reached the operative stage by 1906. With the advent of the economy program instituted under Mr. Vail in 1907, development work was greatly curtailed, but repeaters continued to receive major attention in an effort to render them commercially practicable. Many patents were secured on various alternatives and improvements in both repeater

¹⁹ United States patents Nos. 652,230 and 652,231.

²⁰ United States patent No. 761,995.

²¹ See exhibit 1979.

elements and circuits. Although the development effort was to some extent successful and mechanical repeaters were installed in the system, it was apparent that a repeater of the mechanical type had almost insurmountable inherent disadvantages.

In the search for an adequate substitute, attention was directed to mercury arc repeaters. The exclusive domestic rights for wire telephony and telegraphy were secured under the Cooper-Hewitt mercury-arc patents. The ensuing developments gave rise to a group of patents covering mercury arc repeaters, oscillators, etc.

Beginning about 1912, experiments were made in an effort to improve the De Forest audion or vacuum tube and to adapt it to repeater work. By 1913 these experiments had met with such marked success that the American Co. in that year found it expedient to purchase all patent rights, except a personal nontransferable right reserved by De Forest, to the vacuum tube and its related circuits. These circuits were applicable not only to repeaters and other devices for use in wire telephony but to methods and instrumentalities of fundamental importance in radiotelephony and telegraphy as well. Additional rights under other De Forest inventions were secured in the years 1914 and 1917.

In 1914 several vacuum tube repeaters were installed for commercial service at Philadelphia, and in 1915 such repeaters made possible the opening of the transcontinental telephone line. This repeater was so superior to the Shreeve mechanical repeater that few of the latter were supplied after 1916.

In adapting the vacuum tube repeater to telephone use, it was found that the circuit previously employed with the Shreeve repeater was unsatisfactory for some purposes. The solution was found in a repeater circuit invented by Elwood Grissinger, an independent, and exclusive rights thereto were purchased by the American Co. The patent²² on this circuit, issued in 1916, covered until 1933 probably the most important repeater circuit ever devised.

Over the period of the development of the repeater the Bell System was not unaware of the potential threat of radio to encroach upon the field of wire telephony, and in the research and development routines set up in accordance with the policy announced in 1912, this factor was not neglected. This realization was undoubtedly responsible for the rapid developments and the accumulation of patents particularly applicable to the radio art, arising in connection with the wire-telephone developments on mercury arc and vacuum-tube repeaters. By 1920 the Bell System possessed patents and patent rights that covered every use of the vacuum tube in telephony. A number of these patents were essential for the commercial use of radio.

Drawing upon the experiences of Maj. Gen. George O. Squier, of the United States Signal Corps, in his development of the "wired wireless" system of telephone transmission,²³ the Bell System investigated the possibilities of telephone communication by carrier current systems employing vacuum tubes and other devices applicable to repeater and radio technique. By 1918 this development had reached the state of immediate prospective commercial application. This method of transmission was found applicable to both open wire and cable and has been installed extensively in the open-wire plant of the Bell

²² United States patent No. 1,198,212.

²³ See *Squier v. American Telephone and Telegraph Company*, 21 Fed. (2d) 747.

System. However, major difficulties were encountered in applying this method of transmission to conventional cables containing closely grouped wires which have been overcome only recently. Experiments were begun in 1927 with a special form of cable known as the coaxial. Through the application of refined technique in repeaters and carrier transmission, the Bell System has developed a coaxial cable system capable of transmitting over a single coaxial circuit the broad frequency bands required for the transmission of television, or the simultaneous transmission of hundreds of telephone conversations, or, alternatively, the simultaneous transmission of thousands of telegraph messages.

Such a system will make possible the furnishing of wire-transmission services for visual broadcasting, just as the present program transmission network connects aural broadcasting studios and stations. This development offers the possibility of a substantial savings in the rendering of long-distance telephone and telegraph services over lines where the traffic load and plant conditions warrant its installation.

On May 13, 1935, the American Co. made application to the Federal Communications Commission for a certificate of authorization to construct an experimental coaxial cable system between New York and Philadelphia. The certificate was granted on February 26, 1936, subject to certain conditions specified therein.²⁴ Since that date, the installation of the system has been completed, and the system has been tested for its applicability to the transmission of telephony, telegraphy, and television. At present new repeaters and terminal equipment are being installed for the purpose of increasing the frequency band which may be transmitted over the cable.

The above-described program of research and development in long-distance telephony and allied fields, with its accompanying program of patent acquisition, has been continued to the present date. These programs, in conjunction with the patent rights acquired by the Bell System, including the rights obtained under the agreements described hereinafter, have been a major factor in the maintenance of the Bell System's paramount position in long-distance telephony in the United States.

Licensing policy.—Notwithstanding its ownership of important patents, the Bell System was not, as of 1920, entirely free to exploit radio-telephony, nor to use vacuum-tube repeaters and carrier systems for wire telephony, without the possibility of patent infringement suits by adverse interests.

During the World War, in response to governmental appeal and a guaranty of protection against infringement suits, all communications interests were directed toward the development and furnishing of an adequate service to meet the national emergency. By 1919, therefore, there existed many conflicting interests in patents, applicable to communications.

In 1919 the Marconi Co. of America, a subsidiary of Marconi's Wireless Telegraph Co. (Ltd.), of Great Britain, negotiated with the General Electric Co. for exclusive rights to the Alexanderson alternator, which had rendered radiotelegraph communications with Europe practicable during the war period. The Navy Department, realizing the danger of having so important a device in the hands of foreign interests, prevailed upon the General Electric Co. to cease negotiations

²⁴ Federal Communications Commission, Docket No. 3065.

with the Marconi Co. and to work out a contract for the formation of a domestic company. This contract with the Navy Department was never executed.

The first step was taken by General Electric Co., and consisted of organizing the Radio Corporation of America on October 17, 1919, which then bought the physical assets of the Marconi Co. of America. As a preliminary to this transaction the General Electric Co. had acquired the stockholding of the British Marconi Co. in the American Marconi Co.

By a license agreement executed on November 20, 1919, the General Electric Co. granted the R. C. A. substantially exclusive radio communication rights under all patents or patent rights owned or to be owned by the General Electric Co. Among the important patents and patent rights then owned were those to the Fleming valve or fundamental vacuum tube, acquired from the Marconi Co., the rights to the Alexanderson high-frequency alternator and its related circuits, the rights to radio frequency amplifiers, and the contingent rights to the "hard" or "high-vacuum" tube. This latter right was disputed by the Bell System, which based its claim upon the use of high-vacuum tubes in its early repeater developments.²⁵

The complicated patent situation prevailing at the conclusion of the World War could seriously restrict further development and adaptation of repeaters and carrier current for wire telephony and telegraphy and thereby affect the American Co.'s patent monopoly in long-distance wire telephony and the Western Electric Co.'s monopoly in the manufacture and sale of equipment therefor. Such delay might offer opportunities for others to enter the field of two-way radiotelephony for public service.

(1) The Cross-Licensing Agreement of July 1, 1920:²⁶ With the foregoing outlook the American Co. executed a license exchange agreement with the General Electric Co. on July 1, 1920. This agreement was for a period of 10 years and gave to each party the use in certain fields of patents and patent rights owned by the other. In general, the scope of the licenses granted was to use methods and processes and to make, use, lease, sell, or otherwise dispose of apparatus, machines, devices, appliances, and systems embodying the inventions of the several patents in the fields in which the licenses were granted. It was provided, however, that no rights were granted to either party to manufacture, or to have manufactured, apparatus of the character at the time manufactured by the other party, except in factories owned or operated by one or the other of the parties thereto, or by their controlled companies.

Each party received nonexclusive licenses to manufacture for and sell to the United States Government radio apparatus and systems for governmental use.

In the domestic field of wire telegraphy the American Co. received exclusive licenses generally, subject to a nonexclusive license to the General Electric Co. to construct and operate wire telegraph systems for its own use. No licenses were exchanged in transoceanic wire telegraphy.

In the domestic field of wire telephony the American Co. received exclusive licenses generally, subject to a license to the General Electric

²⁵ For further details, see report of Federal Trade Commission on Radio Industry, December 1923, exhibit 1982, ch. 1, sec. 7.

²⁶ See exhibit 289-A6.

Co., exclusive as to all except the American Co., to make and sell to electric light, power, and traction companies for their own use apparatus for carrier current telephone communication over wires.

In the field of transoceanic wire telephony, nonexclusive licenses were exchanged.

In the field of radiotelegraphy the General Electric Co. received exclusive licenses, subject to a nonexclusive license to the American Co. for uses incidental to the commercial operation of wire telegraph and wire and radiotelephone systems.

In the domestic field of radiotelephony the American Co. received exclusive licenses for public service purposes. It granted to the General Electric Co. exclusive licenses for uses incidental to the commercial operation of electric power, light, and traction companies; for uses by and between airplanes, ships, and other automotive vehicles, except railways; for certain private purposes incidental to business operations; and for all amateur radio purposes; and granted nonexclusive licenses to the General Electric Co. for its own use; to establish and maintain stations for communicating with automotive vehicles and stations for transmitting or broadcasting news, music, and entertainment; and to make and sell receiving sets for reception from the latter stations. In the field of transoceanic radiotelephony, each company received nonexclusive licenses for its own use. Public-service transoceanic radiotelephony was reserved to the General Electric Co., to the stations of which American Co. could connect to render a public service of this character.

The agreement contained miscellaneous provisions, such as those providing for the exchange of licenses in certain minor fields and for the future acquisition of such patent rights that licenses of the above scope might be extended thereunder.

By extension agreements executed the same day the Western Electric Co. and R. C. A. extended to the General Electric Co. and the American Co., respectively, licenses of the same scope as those granted in the principal agreement, and in return the American Co. and the General Electric Co. obtained the right to extend all licenses received to the Western Electric Co. and the R. C. A., respectively. In this arrangement the adherence of the American Co. to its policy of control over Bell System patents and patent rights can be recognized.

By subsequent agreements the licenses granted to the General Electric Co. were extended to the Westinghouse Electric and Manufacturing Co., and to the United Fruit Co. and its subsidiaries. Under the patents of these companies the American Co. received in return licenses of the same scope as those of the principal agreement, with the right to extend them to the Western Electric Co. By virtue of these agreements the American Co. obtained rights under the Fessenden, Pupin, Armstrong, and other important inventions applicable to wire and radio communications.²⁷

For the purpose of brevity, these last-named companies, together with the General Electric Co. and R. C. A., will be referred to hereinafter as the radio group.

(2) The arbitration proceedings under the 1920 cross-licensing agreement: After the execution of the 1920 cross-licensing agreement and the extension agreements differences of opinion arose between

²⁷ For details, see Report of Federal Trade Commission on Radio Industry, December 1923, exhibit 1962, ch. 2, secs. 4 to 6, inclusive.

the Bell System and the radio group on many points. Among other things, the Bell System claimed that it had the exclusive rights to furnish wire facilities for interconnecting broadcasting stations and studios, and to manufacture and sell radiobroadcast transmitting apparatus to others than the radio group, and a nonexclusive right under its own patents to manufacture and sell radio broadcast receiving apparatus. Under these claims some officials of the Bell System visualized that it would ultimately monopolize the broadcasting industry.²⁸

The radio group, on the other hand, asserted that broadcasting was an amateur service to which it held exclusive rights, and that the use of wires in connection with broadcasting was incidental to its right under the license contract to use the patents of both groups for establishing and maintaining broadcasting stations for the transmission of news, music, and entertainment.

In accordance with the terms of an agreement executed between the parties on December 28, 1923, the dispute was submitted for arbitration. In a draft decision referred to the parties for suggestions on November 13, 1924, regarding the above and other controversial issues, the referee decided in substance as follows:²⁹ (1) the radio group had nonexclusive rights to establish and maintain transmitting stations for transmitting or broadcasting news, music, and entertainment from a transmitting station to outlying points; (2) the radio group had rights in all radiotelephone receiving apparatus for the reception of all broadcasted news, music, and entertainment; (3) that the exercise of (1) or (2) did not come within the amateur field, to which the radio group had exclusive rights under the contract; (4) as incidental to its transmitting stations the radio group had the right to establish and maintain permanent or temporary pick-up wires of any length, and to utilize all devices whether wire or wireless, including radio relays, useful for the creation or transmission of the electric or radio waves incidental to radio transmission of news, music, and entertainment; (5) as incidental to the reception of news, music, and entertainment, the radio group had rights in all devices or apparatus, whether wire, carrier current, or radio, useful in the reproduction of the original sound; (6) the Bell System received no rights under the patents of the radio group in radiobroadcast transmission or reception of news, music, and entertainment; and (7) that broadcasting by the use of wire or carrier current was wire telephony, the exclusive rights thereto being in the Bell System.

The proposed decision of the referee was not satisfactory to either party. It was never made final and from that time until July 1, 1926, negotiations were carried on in an effort to come to an agreement.

The American Co. had a number of alternative plans it might pursue in settling the unsatisfactory situation resulting from the referee's draft decision. One of these, characterized by an American Co. official as the final concession to be made by the Bell System, was to agree to withdraw from the broadcasting field for a substantial consideration and allow the radio group to control that industry, provided that wire services were secured from the Bell System at profitable rates.

²⁸ See exhibit 280, p. 82.

²⁹ Ibid, p. 26.

(3) The cross-licensing agreement of July 1, 1926:³⁰ On July 1, 1926, a series of three contracts was entered into between the radio group and the Bell System. The first of these contracts was a purchase agreement³¹ between the American Co., its subsidiary, the Broadcasting Co. of America, and R. C. A., whereby the Broadcasting Co., with the assent of the American Co., sold its assets, including station WEAf, to R. C. A. In the event the Bell System entered the broadcasting field before July 1, 1933, a part of the purchase price of station WEAf, \$800,000, was to be recovered by R. C. A. from the American Co. The second was a service agreement³² between the American Co. and the R. C. A., under which the R. C. A. agreed to obtain from the Bell System, and the latter agreed to furnish, all broadcasting or program transmission wire service involving the use of Bell System patents. In the event the Bell System failed or refused to furnish the wire services required by R. C. A., R. C. A. was permitted to obtain such services from others or to set up its own transmission networks under the patents of both parties.

The third of the contracts hereinafter designated as the cross-licensing agreement of July 1, 1926, was a modification of the license agreement of July 1, 1920. As in the 1920 agreement, the cross-licensing agreement of July 1, 1926, included an exchange of licenses whereby each group obtained exclusive rights in certain fields and nonexclusive rights in others.

In the field of wire telegraphy, including picture transmission, the Bell System obtained exclusive licenses generally; subject to an exclusive license to the radio group for transmission and reception of programs over power lines, and subject also to nonexclusive licenses to the radio group for transmission over its own lines, for uses incidental to the operation of power systems and other fields reserved to it under the agreement, and for train intercommunication.

In the field of wire telephony the Bell System obtained exclusive licenses generally; subject to a license to the radio group, exclusive as to others than the Bell System, for one-way and two-way carrier telephone transmission and reception over electric, heat, light, power, and traction lines for owner use; subject to an exclusive license to the radio group for the transmission and reception of programs over such lines and for the use of such lines as pick-up lines for broadcasting; subject to nonexclusive licenses to the radio group for one-way and two-way wire telephony on its own lines for its own use, including broadcasting networks, for the distribution of broadcast and recorded programs to audiences and throughout buildings, for uses incidental to power purposes, and for train intercommunication; and subject to a license reserved by the radio group under its own patents to use the wire facilities of others for broadcast and other incidental uses upon failure of the Bell System to provide the same.

In the field of radiotelegraphy the radio group obtained exclusive licenses generally, subject to an exclusive license to the Bell System, to manufacture combined telephone and telegraph ship sets and to sell the same to ships of foreign registry and to domestic harbor craft; and subject to nonexclusive licenses to the Bell System for specific purposes, such as for its own use, for public use in emergencies, for rendering a domestic service analogous to its domestic leased wire or

³⁰ See exhibit 289-A19.

³¹ See exhibit 289, p. 38. See also *infra*, p. 393.

³² *Ibid.*, p. 42.

special contract service, for a public service of combined two-way television and speech, and for combined radiotelephone and telegraph sets for export, and for use on airplanes and other automotive devices other than ships and railway vehicles where such sets are not for transoceanic use.

In the field of two-way transoceanic radiotelephony the Bell System was granted the exclusive right to make and use, but not to sell, lease, or otherwise dispose of, apparatus and systems for use in the continental United States. The radio group received exclusive rights to make and sell for export, subject to the nonexclusive right of the Bell System to make and sell to foreign stations communicating with domestic stations of the Bell System.

In the field of two-way radiotelephony other than transoceanic, the Bell System was granted exclusive licenses for public service in general, subject to exclusive licenses to the radio group for amateur purposes and subject to nonexclusive licenses to the radio group for specific purpose such as for its own use, power purposes, train intercommunication, and combined radiotelephone and telegraph sets for airplanes and other automotive devices other than ships and railway vehicles.

In the field of one-way radiotelephony nonexclusive licenses were exchanged for rendering a commercial service to a particular class of customers (stock quotations, news, etc.) and for the manufacture, sale, lease, and use of radio transmitters, including broadcast transmitters. The radio group obtained exclusive licenses generally to the reception of one-way programs, subject to a nonexclusive and limited license to the Bell System to make and sell radio receivers for export and at retail.

In the field of sound recording the Bell System obtained exclusive licenses as to electrical sound recording apparatus, electrical phonographs, and sound picture equipment related to or connected with the field of wire telephony other than power wire program transmission and reception. The radio group obtained exclusive licenses as to electrical sound recording apparatus, electrical phonographs, and sound picture equipment related to or connected with one-way radio reception and power wire transmission and reception of programs and for private use in homes. Nonexclusive licenses were exchanged as to sound recording for motion pictures for use other than in homes.

In addition to the exchange of licenses in the above fields of primary importance the Bell System received an exclusive license in the field of train dispatching. The radio group received exclusive licenses in power and household devices for noncommunication purposes, and in railroad signaling, X-ray apparatus, and radio goniometry. Nonexclusive licenses were exchanged in certain minor fields in which neither group was deemed to have any prior interest.

Briefly stated, the Bell System had by the purchase agreement and the service agreement relinquished its hold on radiobroadcasting stations, but had received thereby a firm grip upon the furnishing of wire facilities for broadcast use. Under the cross-licensing agreement of July 1, 1926, it had strengthened measurably its hold upon two-way radiotelephony by securing control of domestic shore stations, whether used for transoceanic service with the United States or for ship-to-shore or coastal harbor service. In accordance with its early objectives, it had maintained its position in public service wire telephony and telegraphy.

(4) The antitrust suit: On May 13, 1930, the United States Government filed a petition in the District Court of the United States for the District of Delaware ³³ against the American Co., the Western Electric Co., General Electric Co., Westinghouse Electric & Manufacturing Co., General Motors Corporation, et al. The petition alleged that the defendants were guilty of unlawful combination and conspiracy in restraint of interstate commerce in the manufacture, use and sale of radio apparatus; and that the defendants were parties to certain contracts, agreements, and understandings in restraint of such commerce in violation of section (1) of the act of Congress known as the Sherman Antitrust Act.³⁴ One of the contracts referred to by the Government in its petition was the license agreement dated July 1, 1926, between the Bell System and the radio group.

In the early part of 1932 the Government filed an amended and supplemental petition in which additional companies were named parties defendant, and which, among other things, set forth that under the license agreements between the Bell System and the radio group the former had received the exclusive right as to certain fields of telegraphy and telephony, both wire and radio, and that the radio group had received the exclusive right to certain other fields.

For a year and a half, prior to November 1932, negotiations were carried on between the contracting parties on the one side and representatives of the United States Department of Justice on the other. The special assistant to the Attorney General in charge of the suit communicated to the telephone and radio interests the attitude of the Government, which in short involved the elimination of the exclusive provisions of the 1926 license agreement. Following these suggestions a new contract was executed on July 1, 1932,³⁵ which canceled the license agreement of July 1, 1926. This new contract was submitted to the court, and by a stipulation of November 21, 1932, between the Government and all the defendants, except the American Co., Western Electric Co., and two other defendants, it was agreed (1) that the suit be dismissed as to the American Co. and Western, and (2) that the Department of Justice found no objection to the new cross-licensing agreement. On the same date a consent decree was entered against the remaining parties to the suit enjoining them from enforcing the exclusive provisions of the cross-licensing agreements.

(5) The cross-licensing agreement of July 1, 1932:³⁶ The fields in which the licenses were exchanged under the cross-licensing agreement of July 1, 1932, were substantially the same as the fields of exchange under the 1926 agreement, the licenses being made non-exclusive rather than exclusive.

As admitted by Bell System officials, in correspondence quoted in part hereinafter,³⁷ the position of the Bell System in the fields of its primary interests was not endangered by the nonexclusive nature of the 1932 cross-licensing agreement. On the contrary, there is evidence ³⁸ to the effect that the Bell System was desirous of entering

³³ In equity. No. 793.

³⁴ 26 Stat. 209.

³⁵ See exhibit 289-A35.

³⁶ Ibid.

³⁷ See pp. 231-232.

³⁸ See exhibit 1423; memorandum, G. E. Folk to C. E. Cooper, October 30, 1929, reading in part as follows: "Our preference would have been (1920) to grant to the General Electric Co. nonexclusive licenses only and to receive in exchange nonexclusive licenses only where the licenses are at present exclusive. Such exchange was proposed to the General Electric Co. but was wholly unsatisfactory to it." [Parenthetical expression supplied.]

the cross-licensing agreements in 1920 on a nonexclusive basis, realizing that such an arrangement would permit of somewhat more freedom in the use and development of services ancillary to the telephone business, and that the exclusive rights under its own patents would render it invulnerable to attack in its own fields.

(6) The supplementary agreement of December 26, 1935:³⁹ On December 26, 1935, the "supplementary agreement" was executed between the Bell System and the R. C. A. The object of this agreement was to modify the 1932 agreement in a few respects to provide for exchange of further licenses between these parties and to effect a settlement of certain disputes, particularly in the sound motion picture field, which had arisen since the 1932 agreement.

Specifically, the following results were achieved by the supplementary agreement: (1) It removed the limitations and restrictions attached to certain licenses in the 1932 agreement. From the standpoint of R. C. A. the new provision gave it broader rights with respect to ship communication, train dispatching, and other mobile station communication, such as airplanes and other automotive devices. From the Bell System standpoint, the restrictions relating to wire program reception apparatus and electrical phonographs in combination with this apparatus were removed. (2) The R. C. A. received licenses for wire program reception apparatus and for vacuum tubes for use in all fields except wire telephony and telegraphy and radio-telephony for public-service communication. The definition of "wires" was expanded to "other guiding structures," which includes coaxial cables and similar structures. (3) Licenses were granted to the Bell System in a number of fields in which it had given but had not received licenses in the 1932 agreement. (4) Licenses were granted to the R. C. A. in a number of fields in which the Bell System had granted licenses to the General Co. in the 1932 agreement, but in which the latter had not extended licenses to the R. C. A. (5) The parties exchanged releases for all claims based upon (a) any patent infringement by reason of the manufacture, use, lease, or sale or the furnishing by either party or subsidiary, of sound recording and reproducing apparatus or licenses for making sound records and motion pictures, or combination sound records and motion pictures; and (b) any past breach of the 1932 agreement by reason of the manufacture, use, lease, or sale of any apparatus for purposes not licensed under that agreement but licensed by the present agreement.

The specific provision in the supplementary agreement expanding the definition of "wires" to "other guiding structures," guarantees to the American Co. the same rights in the coaxial cable systems referred to heretofore, or other conducting or guiding structures, which may be developed as it had previously held in conventional wire telephony and telegraphy.

(7) General effects of the cross-licensing agreements: On June 30, 1932, Dr. Frank B. Jewett, president of the Bell Telephone Laboratories, made an appraisal of the proposed agreement which became the cross-licensing agreement of July 1, 1932, in which it was pointed out that⁴⁰—

The proposed agreement is not a free interchange of nonexclusive licenses between the contracting parties. It is an interchange of nonexclusive licenses

³⁹ See exhibit 394.

⁴⁰ See exhibit 577, p. 8.

with limitations of use. In many cases the grants are unilateral and in others, * * * the limitation of field is such as to make the apparent grants to use actually of little or no value. Broadly speaking, the practical effect of the agreement is to limit the field of possible development of each party to its present major activities. Where unilateral grants only are made it is clearly impossible for the granting party to contemplate successful competition when confronted with an adversary who has both its own and the other person's patents. Even where bilateral licenses are made, there is probably little danger of competition by the grantee in fields where the grantor has already attained to a commanding position. Thus, while a casual reading of the agreement by one not thoroughly conversant with all the factors may appear to establish the basis for an enlarged free development in most of the fields, this is not actually the case.

In commenting upon Dr. Jewett's statement that the "proposed agreement is not a free interchange of nonexclusive licenses between the contracting parties," George E. Folk, general patent attorney for the American Co. (1918-37), stated: ⁴¹

* * * If it were I do not see how we could consent to such an agreement. Would we wish to grant to others the right, for example, to compete with us under our own patents in our present fields of long-distance communication, both wire and wireless telephony and telegraphy? * * *

From the foregoing it is apparent that these agreements do not embody the inherent characteristics of true cross-licensing; that is, there was not accomplished a free interchange of rights to use the patents in all fields. Although the licenses were made nonexclusive in the 1932 agreement, and some additional licenses were granted in some fields which were formerly exclusive, the fields in which licenses were granted remained for the most part the same as in the former agreements, and no general mutual or reciprocal exchange of licenses was achieved. The 1935 agreement removed some of the restrictions relating to reception apparatus and electric phonographs for wire broadcasting present in the 1926 and 1932 agreements, and granted additional licenses to the parties, some of which were mutual and reciprocal grants for the same purposes, but on the whole it left the general principles of the 1932 agreement undisturbed.

Telegraphy.—The American Co. has always to a greater or lesser extent exploited the private-line telegraph field as an adjunct to its telephone business and at one time attempted to obtain a dominant position in the public telegraph service field.⁴² The corporate name of the present holding company of the Bell System, the American Telephone & Telegraph Co., organized in 1885 to operate the long-distance services of the Bell System, discloses the joint operation of telephone and telegraph systems as one of the primary objectives of the Bell System. In 1888, Mr. Lockwood expressed the opinion that in the fields of simultaneous telegraphy and telephony, and multiple telephony using the same lines, the Bell System could afford to be more liberal in its acquisition of patents than in any other, and that it was necessary to gain as nearly a monopoly as possible in these fields.

Since the 1879 contract, which divided the fields of telegraphy and telephony between the Western Union Telegraph Co. and the American Bell Telephone Co., respectively, was still in force at the time that Lockwood expressed his opinion, the Bell Co. was barred from exploiting the telegraph field, except as to private-wire service. However, this did not prevent the attainment of a strong patent position.

⁴¹ See exhibit 1429.

⁴² See exhibit 2110, p. 76.

By 1909 the Bell System was prepared to control, through patents, the simultaneous operation of telephone and telegraph systems over the same conductors. In that year the American Co. purchased a substantial stock interest in the Western Union Telegraph Co. and assumed control over the activities of that company. Subsequent to complaints received by the Department of Justice, negotiations were carried on between the Attorney General and the American Co. officials which resulted in an agreement on the part of the American Co. to dispose of its Western Union stock as set forth in what has become popularly known as the "Kingsbury commitment" of December 19, 1913.⁴³

From this period forward the Bell System has developed certain devices particularly useful in the telegraph field. Some of these developments, particularly those on apparatus, were purely telegraphic, while others, such as carrier telegraph systems, were the offspring of telephone developments. The patents resulting from these developments were augmented by purchase of important patents relating particularly to telegraph-printing apparatus; by a licensing agreement⁴⁴ in 1923 with one of its major competitors in the manufacture of teletypewriter equipment, the Morkrum Co.; and in 1925, 1928, 1932, and 1934 by cross-licensing agreements⁴⁵ with the International Standard Electric Corporation, a subsidiary of the International Telephone & Telegraph Co. In the field of telegraphy, these licenses are exclusive to the Western Electric Co. within the United States until 1940.

On September 30, 1930, the American Co. purchased all common and preferred stock of the Teletype Corporation, formerly the Morkrum-Kleinschmidt Corporation, a combination of the Western Electric Co.'s two major competitors in the manufacture of teletypewriter equipment, and transferred the same to the Western Electric Co., thereby eliminating all competition in the manufacture of teletypewriter machines. Since that time the Teletype Corporation has been substantially the sole supplier of this apparatus in the United States.

On September 10, 1936,⁴⁶ the rights and obligations of the Morkrum Co. under the contract of June 13, 1923, with the American Co. and the Western Electric Co. were transferred in their entirety to the Teletype Corporation. The uses of the teletypewriter machines sold by the Teletype Corporation are restricted, therefore, in accordance with the terms of this contract, as modified by subsequent agreements and releases. Denial of the right of the Teletype Corporation to make and sell teletypewriter equipment for use under certain system patents of the American Co. and the Western Electric Co. serves to protect the teletypewriter exchange business of the Bell System against competition. As a further protection to this business, the American Co. and the Western Electric Co. authorize the Teletype Corporation to sell apparatus for telegraph forking and extension systems⁴⁷ by a restricted bill of sale which contains notice of the restricted patent license under which the apparatus is made and sold, and under which the purchaser agrees to use such apparatus only in

⁴³ See ch. 5, p. 139.

⁴⁴ See exhibit 1967, document I-5-(a).

⁴⁵ For further discussion of these agreements see p. 187.

⁴⁶ See exhibit 1967, document I-5-(b).

⁴⁷ Telegraph forking and extension apparatus makes possible the tying of local or branch lines into main or trunk lines which are capable of carrying a high traffic load.

connection with the rendering of service between public offices and not to dispose of it for any other purpose.

By an agreement dated August 8, 1928, the American Co. granted the Western Union Telegraph Co. the right to lease carrier telegraph equipment employing vacuum tubes, at stated annual rentals for various items of equipment and additional rentals per channel mile. The agreement specified that the equipment was to be used solely in rendering services between public offices or for ticker service. An agreement, containing identical provisions, was effected between the American Co. and the Postal Telegraph-Cable Co. on August 22, 1928. No leases have been consummated under the above provisions of either of these agreements.

The Bell System does not grant licenses on telegraph apparatus to others but maintains the complete manufacturing monopoly afforded by its patents. Under telegraph-system patents, licenses are granted only for specific uses in connection with the sale or lease of apparatus, as above noted.

The Bell System has not been involved in litigation relative to telegraph patents.

Bell System Patent Position as of January 1, 1935.

On January 1, 1935, the Bell System owned 9,255 patents and was licensed under more than 6,000 patents owned by others. It had 1,279 patent applications pending before the Patent Office. These patent rights embraced all of the fields of major importance in communications, including those fields specifically considered in the cross-licensing agreements. Only 3.5 percent of its patents were acquired from outside sources, the remaining 96.5 percent having resulted from the intensive research and development programs maintained by the Bell System.

Information supplied by the American Co. indicates that it considers its patents to be in the following classifications: Of the patents owned, 4,317 or 46.7 percent were in use by the Bell System; 608 patents were not in use because of the incomplete development; 237 patents were not in use because practical application depended upon other developments; 2,126 patents were unused because of the availability of superior alternatives; 660 patents awaited the determination of commercial application; and 1,307 patents were unused because no public necessity was indicated.

As an aid to an understanding of the Bell System's patent position in specific fields, special studies were made of Patent Office classes considered by the investigator to be representative of the fields of telephony, telegraphy, radio, and sound recording and reproducing. The classes and subclasses included in the studies are listed in appendix 12 to this report.

The study relating to local and long-distance telephony showed a total of 5,577 existing patents, of which the Bell System owned 2,578 or 46.2 percent. Of the patents owned by the Bell System, 1,600, or 62.1 percent, were unused. The patents owned by the Bell System included important patents relating to automatic telephone systems, which, in conjunction with the license exchange agreements between the Western Electric Co. and independent manufacturers of telephone equipment and Bell System intercompany contractual arrangements assured to the former company a monopoly in the manufacture and sale of standardized automatic equipment to the oper-

ating licensee companies. In long-distance telephony, basic patents had expired on loading, repeaters, and other important adjuncts of wire telephony, but the Bell System still maintained a strong patent hold upon the better and more efficient instrumentalities. Among the latter were special loading alloys, efficient forms of vacuum tube repeaters, carrier systems, and the coaxial cable. The cross-licensing agreements with the radio group greatly improved the Bell System patent position and also the ability of the Bell System to maintain its dominant position in the exploitation of the field of public service in long-distance telephony and radio.

The telegraph study covered patents considered by the investigator to be representative of all the important fields of wire and cable telegraphy, such as manual, teletypewriter, and picture transmission, including television. Of the total of 1,841 existing patents, the Bell System owned 832, or 45.2 percent, and held idle 540, or 29.3 percent. The idle patents constituted 65 percent of the patents owned by the Bell System in the classes selected. The Bell System owned important patents covering teletypewriter exchanges (manual) which are standard with its system. It also owned patents of equal scope covering automatic teletypewriter exchanges, although these were not used. The Teletype Corporation and the Western Electric Co. had important patents covering teletype transmitting and receiving apparatus, tape-perforating machines, and remote-control systems. The Bell System patents also supported a controlling position in carrier telegraphy using vacuum tubes, and necessary adjuncts for multiplex telegraph transmission, such as the forking and extension systems referred to heretofore.

The consideration of radio classes, involving 5,781 patents, showed a Bell System ownership of 875 patents, or 15.1 percent, and the use of 58.3 percent of those owned. Notwithstanding the relatively small percentage of Bell ownership in the radio classes studied, the Bell System owned some of the most important patents in the radio field. In its suits against patent infringers, the R. C. A. has placed the greatest reliance upon Bell System patents. In the majority of cases the patents have been held to be valid and infringed.⁴⁸

In classes selected by the investigator as representative of the sound recording and reproducing fields, there were 4,866 existing patents, of which the Bell System owned 821, or 16.9 percent. Of those owned, 407, or 49.6 percent, were unused. It should be noted that patents and patent classes applicable to sound recording and reproducing overlap to a considerable extent those applicable to telephony and radio. Among the patents applicable to sound recording and reproducing systems and particularly to sound amplifiers for use with such systems, were some of the most broadly controlling patents owned by the Bell System. Among them were to be found the majority of the adjudicated patents, whose validity had been sustained in infringement suits in both the radio and sound picture fields.⁴⁹

Intercompany Patent Relationships of the Bell System.⁵⁰

In order to utilize to the fullest advantage the value of patents as an effective device in furthering their primary objective of the complete occupation of the telephone field, the founders of the Bell System

⁴⁸ See exhibit 1989, pp. 66-67.

⁴⁹ Ibid.

⁵⁰ For copies of agreements, contracts, releases, and memoranda referred to in this section, unless otherwise noted, see exhibit 1967.

realized that all patents relating to telephone systems and apparatus must be under the control of the parent company of the Bell System. From the beginning, the control of Bell System patents by the American Co. and its predecessors has been effected through agreements between the American Co. and its subsidiary companies, and through agreements between subsidiaries of the Bell System. Under these agreements certain rights under Bell System patents have resided in subsidiary companies, and in some instances exclusive rights for particular purposes, but nevertheless the American Co. has retained the right to control the extent and manner of use of said patents in order to achieve its primary objective, namely, the dual monopoly of operating and manufacturing in the telephone field.

Patent relationships of the American Co. and the operating licensee companies.—Under the early temporary license contracts with the operating licensees, and later under the permanent license-service contracts, the operating licensee companies were granted the mere right to use such patented devices as were made available to them and such patented methods as were necessarily employed in connection with the devices. The remaining rights under Bell System patents resided either in the parent company, the American Co. and its predecessors, or in the Western Electric Co. These contracts exist today with substantially identical provisions as to patents, which provisions are ⁸¹—

(1) The licensee has the right to use within its territory all telephones and all telephonic devices, apparatus, methods, and systems needed for its business and covered by patents owned or controlled by the licensor or which it may have the right to authorize the associated companies of the Bell System to use; (2) the licensee may not dispose of any "telephones" or "telephonic appliances" to nonlicensees of the Bell System without the consent of the licensor; (3) the licensee is saved harmless from patent-infringement suits. If any necessary patent rights are held by others, the licensor will (4) acquire the necessary patent rights if related to "telephones"; or (5) provide arrangements for making available necessary "telephonic appliances" or systems.

From the above, it is apparent that the license-service contract between the American Co. and each of the operating licensee companies grants only the right to use under Bell System patents owned or controlled by the American Co. This restricted right is further limited by the stipulation that the operating companies cannot dispose of equipment purchased under Bell System patents without the consent of the American Co.

From the beginning there has existed within the Bell System the practice, not provided for by contract but understood by operating licensee companies and their employees alike, of transferring to the parent company all rights to inventions made within the Bell System. Such inventions are acquired, usually for a nominal fee of \$50 to the inventor, the American Co. bearing the expense of obtaining the patent. No fee is received nor rights in these patents retained by the operating licensee companies. The patents are retained in the name of the American Co. and the operating licensee companies have thereunder the mere right to use granted them under the license-service

⁸¹ See ch. 6. For sample copy of contract, see appendix 7.

contracts. The patents acquired by the American Co. from the employees of the operating licensee companies are few in number.

The American Co. was organized in 1885, for the purpose of operating the long-distance lines of the Bell System,⁵² and operated under an arrangement with the American Bell Co. similar to the provisions of the contracts with the operating licensee companies. A formal contract embodying these provisions was executed on January 1, 1894. Upon the elevation of the American Co. to the position of the parent company of the Bell System, its operating and holding-company functions were divided, and the long-distance-lines department, later changed to the long lines department, was organized in 1908. As a department of the American Co. and possessing no separate corporate entity, the long lines department has no contract with the American Co. but operates under an arrangement similar to the present licensee service contracts between the American Co. and its operating licensee companies.⁵³ Legally, the long lines department stands in the same position with respect to Bell System patents as does the American Co.

Patent relationship between the American Co. and the Western Electric Co.—The contract dated February 6, 1882,⁵⁴ between the American Bell Telephone Co. (predecessor of the American Co.) and the Western Electric Co. (predecessor of the Western Electric Co., Inc.) divided Bell System patents, equipment, and devices into two classes—namely, “telephone” and “telephonic appliances.” The definition of “telephone” under the 1882 contract is—

The word “telephone” as used in this contract includes all instruments employed for the electrical transmission of articulate speech, including therein all attachments and devices which serve to cause, to improve, or to modify the articulating current, or the effects thereof.

The definition of “telephonic appliances” under the 1882 contract is—

Telephonic appliances include calls, switches, switchboards, annunciators, exchange furniture, and other apparatus and devices adapted for use on or for telephone lines, except telephones as above defined.

With respect to patents, the 1882 contract provided: (1) Western gave the Bell Co. the right to purchase all “telephone” inventions, within 6 months from date as to inventions then owned or within 6 months after notice as to all future acquired inventions. (2) Western granted the Bell Co. an exclusive license to make, use, sell, and license others as to all “telephonic appliance” inventions then or thereafter owned or controlled. (3) The Bell Co. granted Western the exclusive right to manufacture and sell “telephones” to the Bell Co. (4) The Bell Co. granted Western an exclusive license to make and sell “telephonic appliances” under inventions then or thereafter owned or controlled, subject to the restrictions (a) that within the United States such sales be only to licensees of the Bell Co. with notice to the licensees that the appliances were licensed only for use with apparatus licensed to them by the Bell Co., and (b) that appliances for foreign sale remain the property of Western until landed in the foreign country and be sold under an agreement that such sales carried no right to use within the United States. Western agreed to pay all royalties and obligations incurred by the Bell Co. in connection with prior acquisi-

⁵² See ch. 1.

⁵³ See ch. 6.

⁵⁴ For copy of contract, see appendix 5.

tions of "telephonic appliance" inventions, and with all future acquired inventions which Western should elect to come under the provisions of the agreement.

The professed purpose of this contract was to make available to the American Bell Telephone Co. and its licensees an adequate supply of high-quality telephones and telephonic appliances. An obvious result, however, was to give the American Bell Telephone Co. the control of the patents of both companies and to assure the Western Electric Co. a monopoly in the supplying of equipment to the operating licensee companies of the Bell System.

After the partial collapse of the Bell System's patent structure prior to 1907, a memorandum agreement, amending the contract of 1882 and dated April 8, 1908, was entered into between the American Co. and the Western Electric Co. by which the exclusive right of the latter to make and sell "telephones" to the American Co. only, and to make and sell "telephonic appliances" to the operating licensee companies only, was amended to grant to the Western Electric Co. the exclusive right to manufacture and sell "telephones" and "telephonic appliances," subject to such restrictions as the American Co. might from time to time impose.

Under the 1882 contract and its 1908 revision, which are still in force today, the American Co. can restrict from time to time the sale of any apparatus which may be classified under the definition "telephones" or "telephonic appliances," ownership of the patents as between the parties having no bearing. The American Co.'s control over the sale by the Western Electric Co. of apparatus which does not come within the classification of "telephones" or "telephonic appliances" is through direct ownership of patents. Outside the classification of "telephone" or "telephonic appliances" the Western Electric Co. is free to do as it pleases under patents owned by it.

Prior to the 1908 revision the Western Electric Co. was permitted to sell "telephonic appliances" to the operating licensee companies but was not permitted to sell "telephones" to other than the American Co. The 1908 revision, together with the releases issued at that time by the American Co. to the Western Electric Co., authorized the latter to manufacture and sell "telephones" to the public, and to manufacture and sell "telephonic appliances" to the public and to sublicensees of any operating licensee company within the latter's territory and with its consent. Releases had been made also whereby the Western Electric Co. could manufacture "telephones" for export, and manufacture and sell "telephones" and "telephonic appliances" to the United States Government under certain conditions and restrictions.

In February 1909 the American Co. authorized the Western Electric Co. to manufacture and sell loading coils to the operating licensee companies, and in June of that year restricted the use and disposal which might be made thereof. In November 1911 the Western Electric Co. was authorized to manufacture and sell loading coils for foreign use subject to the attachment of a restrictive notice which prevented their use within the United States.

On February 11, 1919, in a letter from Theodore N. Vail, president of the American Co., to H. B. Thayer, president of the Western Electric Co., the restrictions upon the Western Electric Co. pursuant to the 1882 contract were restated. The pertinent current restrictions

were: For use within the United States: (1) Vacuum tubes, for whatever use designed, and repeater elements, both of the vacuum tube and mechanical repeater type, whether as individual units or as a part of a set, should not be sold, and should be suitably marked to indicate that they were the property of the American Telephone & Telegraph Co.; (2) loading coils, repeater apparatus, and apparatus especially designed for use therewith other than vacuum tubes and repeater elements, carrier current apparatus, four-wire circuit apparatus, and certain telephone-testing apparatus, insofar as it was controlled by patent rights of the American Telephone & Telegraph Co., might be sold only to the operating licensee companies under a bill of sale restricting the use and disposal of the apparatus, except that such apparatus might be sold for Government use, might be made available to the Postmaster General during Government supervision of communications, and might be sold to colleges, scientific societies, and the like with the approval of the president or vice president of the American Co. Mechanical repeaters might also be sold without restriction for loud speaking or other one-way telephone systems. For export: The Western Electric Co. might sell telephones and telephonic appliances for use in foreign countries provided that it pay to the American Telephone & Telegraph Co. 5 percent of the gross proceeds from such sales of telephones, and provided, further, that in the case of apparatus the sale of which was restricted in this country the sale of such apparatus for export should be limited for use in foreign countries and that the restrictions appear on all bills covering such apparatus.

The provision in the above restatement of restrictions that the Western Electric Co. pay the American Co. 5 percent of the gross proceeds from its export sales of "telephones" is the first instance in which the American Co. required a royalty from the Western Electric Co. for the manufacture and sale under American Co. patents.

A large number of releases have been made to the Western Electric Co. since 1919, pertaining to the manufacture and sale of one-way and two-way communications apparatus to independents, but until recently none of these releases permitted the use of said apparatus for the transmission of messages or signals for hire or for rendering a public service. In 1928 an arrangement was made whereby the Western Electric Co. might thereafter sell to the operating licensee companies of the Bell System transmitters, receivers, and induction coils theretofore leased to them by the American Co. A recent release⁴⁴ extends to the Western Electric Co. the right to sell telephone repeaters, loading coils, and one- and three-channel carrier telephone apparatus to connecting companies of the Bell System. Since 1919 each release giving the Western Electric Co. the right to manufacture and sell to others than the operating licensee companies under "telephone" patents requires 5 percent royalty to the American Co. on the sale price of equipment sold.

Patent relationships of the Bell Telephone Laboratories with the American Co. and with the Western Electric Co.—The Bell Telephone Laboratories, Inc., began operations on January 1, 1925. During 1925 and 1926 work was performed exclusively for the American Co. and the Western Electric Co. Beginning January 1, 1927, E. R. P. I. was added as a customer. On March 1, 1934, the department of

⁴⁴ See exhibit 1979.

development and research of the American Co. was transferred to the Bell Telephone Laboratories.

Article (g) of the certificate of incorporation ⁵⁶ of the Bell Telephone Laboratories provides that its patent activities shall be as follows:

To acquire by purchase or otherwise, and own, use, sell, assign, grant licenses under, and otherwise turn to account and dispose of letters patent of the United States or of any other country, and rights, privileges, and immunities, in, to, or under, or granted or secured in or by such letters patent; and to acquire, make, use, sell, exchange, and deal in inventions, improvements, processes, formulae, and trade secrets, and rights in, to, under, or in respect of said inventions, improvements, processes, formulae, and trade secrets. * * *

It will be noted that the certificate of incorporation does not specify to whom the Bell Telephone Laboratories shall assign patents resulting from its activities. Shortly after the Bell Telephone Laboratories was established a controversy arose between the American Co., the Western Electric Co., and the Bell Telephone Laboratories as to whom United States patents held by the Bell Telephone Laboratories should be assigned. Mr. Tanner, general patent attorney for the Western Electric Co., took the first step for determining the assignment of such patents and patent rights. In a memorandum to Mr. W. P. Sidley, vice president and general counsel of the Western Electric Co., dated May 13, 1925, he proposed (1) that patent applications for inventions made by employees of Western should be assigned immediately to Western; (2) applications thereafter filed by the Bell Laboratories upon inventions which were made by employees of Western prior to January 1, 1925, should be assigned directly to Western as and when the applications were filed; and (3) as to inventions made by employees of the Laboratories Co. after January 1, 1925, a contract should be entered into between the American Co., Western, and the Laboratories, providing that, (a) inventions relating to "telephones" and "telephonic appliances" be assigned by the Laboratories to the American Co. and to Western, respectively, and the rights of the respective companies to such inventions be determined by the provisions of the 1882 contract; (b) all inventions other than "telephones" and "telephonic appliances" be assigned to Western; and (c) foreign rights to all inventions, whether "telephones," "telephonic appliances," or otherwise be assigned to Western.

On November 28, 1927, the board of directors of the Bell Telephone Laboratories authorized its president to execute and deliver to said companies or their nominees, from time to time, as their respective interests might appear, assignments of all patent applications and patents and rights to patents in all countries belonging to or standing in the name of the Bell Telephone Laboratories.

The contract suggested in paragraph (3) of the Tanner proposal was later drafted but never executed. Subsequent to the directors' resolution of November 28, 1927, it became the practice of the Bell Telephone Laboratories to assign to the Western Electric Co. all its patents pertaining to "telephonic appliances" and to assign to the American Co. all its patents pertaining to "telephones," thus carrying out Mr. Tanner's proposal 3 (a). Respecting the Tanner proposal 3 (b), it was advanced that the 1882 contract between the Western Electric Co. and the American Co. did not cover telegraph system and apparatus patents and for that reason the practice followed as to "telephone" and "telephonic appliance" patents could not be followed

⁵⁶ See exhibit 231, appendix III.

with respect to telegraph patents. It was further contended that the American Co. should not take title to patents relating to other than telephony or telegraphy because it was not desirable that the American Co. be either the licensor to outsiders or a necessary party plaintiff in infringement suits. It was argued that the Western Electric Co. should take title to patents not relating to telephony or telegraphy because it was equipped to license others and was under no disability as a plaintiff in infringement suits. The ultimate result of the controversy was that all United States patents relating to other than "telephone" and "telephonic appliances" were permitted to remain in the hands of the Bell Telephone Laboratories.⁵⁷

Mr. Tanner's proposal 3 (c), namely, that all foreign rights in inventions obtained by the Bell Telephone Laboratories be assigned to the Western Electric Co., was carried out with the exception of patents and patent rights obtained in the Dominion of Canada and Newfoundland.⁵⁸

Patent relationship of the Western Electric Co. and the Electrical Research Products, Inc.—The Electrical Research Products, Inc., herein referred to as E. R. P. I., serves as distributor and lessor of equipment manufactured by Western pursuant to releases to it by Western. The equipment is usually covered by patents held either by the Western or the American Co. In cases where the releases pertain to equipment covered by patents owned by the American Co., E. R. P. I. is required to pay Western for transmittal to the American Co. any royalties required by the latter. Also, E. R. P. I. is restricted in the use of American Co. patents to the same extent as is Western.

The original agreement between the Western Electric Co. and E. R. P. I. was dated December 30, 1926. Under this contract Western transferred certain nontelephonic aspects of its business to E. R. P. I., reserving to itself the exclusive right to manufacture any apparatus which E. R. P. I. might require to be manufactured, under all patents or inventions relating to the business transferred, subject to certain rights of the latter if unable to secure acceptance of orders by Western. Under this agreement E. R. P. I. became the licensor, except for certain reserved fields, under Bell System patents. E. R. P. I.'s right to license in specific instances was authorized by releases from Western.

Each party agreed to assign such rights under its patents or patent rights as necessary to the business of the other, upon assumption by the latter of obligations due others under such rights. There is an oral understanding that the legal title to all United States patents and applications for patents acquired by E. R. P. I. will be transferred by it to the Western Electric Co. Pursuant to this understanding E. R. P. I., from time to time, has made transfer of United States patents to Western.

In order not to be a necessary party plaintiff to infringement suits, the American Co., on May 7, 1929, executed an agreement with the Western Electric Co. and E. R. P. I. wherein it granted to the last-named parties the right to sue others on 21 patents relating to vacuum tubes and vacuum-tube circuits used for the recording and reproduction of sound. As of December 31, 1934, six suits had been concluded

⁵⁷ See transcript of record, Federal Communications Commission, special investigation, docket 1, vol. 49, pp. 6473-6477, and exhibit 1968.

⁵⁸ As to these latter rights the Western Electric Co. and the American Co. have agreements, to be discussed hereinafter, with the Northern Electric Co., Ltd. of Canada, and its manufacturing affiliate, the Bell Telephone Co. of Canada.

and one was being prosecuted. In three of the suits decisions were rendered holding certain patents valid and infringed and, on the basis of the valid adjudications, consent decrees and decrees pro confesso were taken by the defendants in the remaining three suits.

Under date of June 28, 1935, an agreement was entered into by which E. R. P. I. transferred to Western (1) all patents, patent rights, and licenses relating to manufacturing machinery, materials, methods, and processes, and to factory equipment; (2) all right, title, and interest to patent licensing contracts of the same character, including those specifically named, and all royalties accruing thereunder. E. R. P. I. thereby relinquished its role of licensor in those fields, and returned to the Western Electric Co. the right to collect the royalties accruing therefrom.

Patent relationship of the Western Electric Co. and the Teletype Corporation.—On June 13, 1923, an agreement was entered into between the Morkrum Co. (predecessor of the Teletype Corporation), the American Co., and the Western Electric Co., under which an exchange of licenses between said companies was provided, each company being given a nonexclusive right to make, use, and sell printing telegraph systems or apparatus covered by patents or applications for patents owned by each of the parties with the exception that the Morkrum Co. was excluded from the right of sale or use of printing telegraph apparatus or any apparatus in the following systems:

- (a) Radiotelegraph systems;
- (b) Carrier-current or so-called "guided wave" or "wired wireless" systems;
- (c) Ciphering and deciphering systems of the type exemplified by certain United States patents;
- (d) Transmission of pictures; and
- (e) Forking or extension systems of the type exemplified by United States patent to Rainey, No. 1,407,042, dated February 21, 1922.

In 1925, the Morkrum Co. assets were taken over by the Morkrum-Kleinschmidt Corporation, a combination of the Western Electric Co.'s two major competitors in the manufacture and sale of tele typewriter equipment, the name of which was later changed to Teletype Corporation. On September 30, 1930, the American Co. purchased all common and preferred stock to the Teletype Corporation and transferred the same to the Western Electric Co.

Under the reservation made by the American Co. and the Western Electric Co. in the agreement dated June 13, 1923, with the Morkrum Co., that is, excluding the Morkrum Co. from the right of sale or use of printing telegraph apparatus or other apparatus in certain systems, and under the telegraph patents acquired by the Western Electric Co. and the American Co. since said agreement, releases are made from time to time to the Teletype Corporation granting it certain rights as to use, manufacture, and sale under the telegraph patents owned by the American Co. and the Western Electric Co. These releases are based upon the payment of royalties by the Teletype Corporation to the Western Electric Co. By virtue of the telegraph patents owned by the American Co. and the Western Electric Co. and by virtue of the restricted bills of sale under which certain

telegraph equipment is sold, its use for record communication purposes is controlled.

The Teletype Corporation has its own patent department and maintains its patent position as to teletypewriters. It does not license outsiders under its patents.⁵⁹

Patent relationship of the Teletype Corporation and the Teletypesetter Corporation.—The Teletypesetter Corporation was organized as a wholly owned subsidiary of the Teletype Corporation pursuant to an agreement of July 6, 1929, between Teletype and Frank E. Gannett and Walter E. Morey, developers of teletypesetter equipment.

By an agreement dated June 5, 1930, Teletype granted Teletypesetter a license to make, use, and sell automatic typesetting methods and apparatus under all patents of Teletype, subject to the payment of royalties and the fixing of a patent notice to apparatus sold, such license not to be extended to others without the consent of Teletype. By an agreement of the same date Teletypesetter granted a license to Teletype under four patent applications.

Teletype has from time to time assigned to Teletypesetter patents relating specifically to typesetting and typesetting apparatus.

Patent relationships with present and former foreign subsidiaries.—Under a contract dated April 23, 1914, between the Northern Electric Co., Ltd., of Canada, and the Western Electric Co., Ltd., a wholly owned Canadian subsidiary of the Western Electric Co., Inc., the Northern Electric Co. received exclusive licenses under Canadian and Newfoundland patents on Western Electric Co. inventions, and the Western Electric Co. received exclusive patent rights within the United States to inventions of the Northern Electric Co.

By an agreement of August 27, 1919, involving the Northern Electric Co., Ltd., the Bell Telephone Co. of Canada, Ltd., Western Electric Co., Ltd., and International Western Electric Co., supplemented by later agreements of March 18, 1922, May 16, 1923, and February 20, 1929, there was an exchange of patent rights under which, in general, Western receives the exclusive right outside of Canada and Newfoundland to all inventions acquired by Northern Electric Co. or Bell Telephone Co. of Canada. In return Northern Electric Co. and Bell Telephone Co. of Canada receive licenses for Canada and Newfoundland under all rights to inventions owned or controlled by Western or the American Co. except in the field of submarine cables. The agreements also provide for exchange of technical and other information and for the payment by Northern Electric Co. to Western Electric Co. of 1 percent of its telephone sales.

The agreement of August 27, 1919, was supplemented by an agreement dated May 16, 1923, whereby the American Co. and the Western Electric Co. assigned to the International Western Electric Co., with reservation of licenses, all their patents of Canada and Newfoundland, except those relating to oceanic submarine cable telegraphy. International Western Electric assigned to Western all United States patent rights acquired from the Bell Telephone Co. of Canada and the Northern Electric Co. during the term of the agreement. The American Co. agreed to take out subsequent patents in Newfoundland and Canada and to grant the Bell Telephone Co. of Canada nonexclu-

⁵⁹ See Transcript of Record, Federal Communications Commission, Special Investigation, Docket 1 pp. 6478-6483.

sive licenses pursuant to a "license contract" hereinafter described.

The International Western Electric Co., was later changed to the International Standard Electric Co., and pursuant to a contract⁶⁰ dated August 14, 1925, was sold to the International Telephone & Telegraph Co. In this contract Western reserved certain assets, including all United States, Canadian, and Newfoundland patent rights. By agreements of October 1, 1925,⁶¹ March 30, 1928,⁶² December 27, 1932,⁶³ and August 14, 1934,⁶⁴ between Western and International Standard Electric Corporation, Western receives certain patent rights with respect to inventions acquired by International and its associated companies up to October 1, 1940. Western's rights in the United States to International's inventions are in general nonexclusive, being exclusive, however, up to October 1, 1940, with respect to a large group of inventions controlled by International prior to August 14, 1934, insofar as telephony, telegraphy, and television are concerned. On the other hand, Western grants International rights, with respect to Western's inventions, acquired before October 1, 1940, in all countries except the United States, Canada, and Newfoundland, these rights being in general exclusive up to October 1, 1940, in the fields of telephony and telegraphy. In other fields, including television, terminal apparatus for submarine cable, and the electrical reproduction of sound from records, the licenses are nonexclusive.

The agreements between Western and International also involve sales agencies, exchange of information, and royalty payments by International.

International's associated companies include a considerable number of foreign manufacturing or operating companies, many of them owned in whole or in part by International, and also some United States companies, particularly Postal Telegraph & Cable Corporation, Federal Telegraph Co., and International Telephone & Telegraph Corporation. Western also receives the benefit, for some countries, including the United States, of agreements by which International receives transferable licenses from a few nonassociate foreign companies.

The foreign rights reserved by the American Co. and Western in foreign fields, under the agreement of August 14, 1934, are exercised through the Electrical Research Products, Inc. This subsidiary in turn grants licenses to 6 foreign corporations and receives licenses from 11. The agreements with 4 corporations are based upon license exchanges. These agreements relate to the fields of sound recording, submarine cable, and cable manufacture.

A license-service contract between the American Co. and the Bell Telephone Co. of Canada was executed May 16, 1923. In consideration of the payment to it of 1 percent of the gross revenues of the Bell Telephone Co. of Canada, the American Co. agreed, among other things, (1) to furnish the Canadian Co. copies of specifications of all applications which the American Co. or Western may file for United States patents for inventions relating to "telephones" and "telephonic appliances" and equipment, including cables applicable for use in the telephone system of the Canadian Co.; (2) upon request of the Canadian Co. the American Co. agreed to patent or cause to be patented

⁶⁰ See exhibit 1983.

⁶¹ See exhibit 1984.

⁶² See exhibit 1985.

⁶³ See exhibit 1986.

⁶⁴ See exhibit 1987.

in the Dominion of Canada and Newfoundland such of the submitted inventions as designated by the Canadian Co.; and (3) the American Co. agreed to grant or cause to be granted to the Canadian Co. licenses to make (including the right to have others make and manufacture for it), use, and sell under each patent obtained in the Dominion of Canada and Newfoundland, which licenses shall be nonexclusive and shall continue until the end of the terms of such patents.⁶⁵ Under this contract the patent rights granted by the American Co. under its patents in the Dominion of Canada and Newfoundland to the Canadian Telephone Co. are superior to the rights granted by the American Co. under its United States patents to the associate operating licensee companies in the United States. However, the Canadian Telephone Co. is not protected against patent infringement as are the operating licensee companies.

Summary.

The Bell System was founded upon the basic telephone patents issued to Alexander Graham Bell. The ownership of these basic patents and the patent rights acquired from the Western Union Telegraph Co. in 1879 gave the Bell System complete control of the telephone field during the life of the basic Bell patents. The active life of the two basic Bell patents extended over a period of 18 years (1876-94), and during that period the Bell System acquired, in addition to the patent rights it obtained from the Western Union Telegraph Co., a large number of improvement patents relating principally to "telephonic appliances" with the purpose of perpetuating through patents its dominant position in the telephone field.

With the expiration of the two basic Bell patents the activity of independent telephone companies greatly increased. The Bell System opposed these activities by patent infringement suits until it became evident, about 1907, that Bell System patents alone were not sufficient to stay the activities of independent companies in the telephone exchange field. Thereafter, the practice of instituting patent infringement suits against the independents was abandoned and the Western Electric Co. was authorized to supply exchange equipment to independent telephone companies in competition with the independent manufacturers. The Western Electric Co. entered this new field of the manufacture and sale of supplies with the permission of the parent company of the Bell System, but subject to such restrictions as said parent company might from time to time impose.

The 1882 contract established the Western Electric Co. as the sole manufacturer of patented equipment for the Bell System operating companies. Since that date the parent company of the Bell System has, through stock control or agreements with the operating companies, retained in the Western Electric Co. the exclusive right to manufacture and sell to said companies equipment covered by Bell System patents; thus none of the licenses granted under Bell System patents to independent manufacturers of telephone equipment have enabled them to sell telephones and telephonic appliances directly to the associated telephone companies of the Bell System. Standardization of patented equipment for the use of the operating licensee companies further assures the purchase of such equipment from the Western Electric Co.

⁶⁵ These provisions supersede a grant in a contract of November 1, 1880, between the American Bell Telephone Co. and the Canadian Telephone Co., Ltd., predecessor of the Bell Telephone Co. of Canada, which provided that all Canadian patents on "telephones" and "telephonic appliances" acquired by the American Co. be assigned to the Canadian Co. See exhibit 130, pp. 105-108.

The ownership of the basic loading-coil patents which were issued in 1900 and 1904 gave to the Bell System a patent position in the field of long-distance telephony which was, for all practical purposes, as strong as that which the Bell System first held in the broader art of telephony under the basic Bell patents. During the life of these basic loading-coil patents, the Bell System, through research and purchase, acquired a dominant patent position respecting repeaters or amplifiers for long-distance telephony. Loading coils and telephone repeaters considered essential to the economical furnishing of satisfactory long distance telephone service were leased to connecting telephone companies beginning in 1926, but were not available to them by purchase until 1937.

The patents relating to repeaters or amplifiers were also extremely important in the fields of radio and sound amplifying for public-address and theater purposes. The patent position of the Bell System in public service telephony (wire and radio) was greatly strengthened by the cross-license agreement with the radio group in the year 1920. The changes in the cross-license agreement between the Bell System and the radio group that took place after 1920 maintained the exclusive patent position of the Bell System in public-service telephony, both wire and radio.

Most of the patents now owned by the Bell System were developed by the system. Excluding these patents under which rights have been obtained, a small percentage of the patents owned have been purchased from persons outside the Bell System. Among the small number purchased, however, are the three most important groups of patents acquired since the basic Bell patents. These groups are: The loading-coil patents of Pupin; the vacuum tube patents of De Forest; and the repeater circuit patents of Grissinger.

Control over patents and patent rights held by the Bell System is in the American Co. by reason of stock control over most of its associated companies; the 1882 contract between the American Co. and its subsidiary, the Western Electric Co.; and the license contract agreements between the American Co. and the associated companies. Under these contracts and agreements the operating licensee companies obtain the right to use patented methods and equipment made available to them by the parent company through its manufacturing subsidiary, the Western Electric Co., and the operating companies may dispose of this patented equipment only to other licensees.

In attaining its patent position, the American Co. has accumulated large numbers of patents that have not been incorporated in equipment made available to the operating companies. In acquiring patents generally applicable to the telephone field, there has been the policy of covering each development as completely as possible even though it was apparent that some of the patents so acquired would probably never be incorporated in equipment actually used by the operating companies.

Bell System patents are made available for incorporation in equipment to be manufactured, sold, and used through and by others in such a manner as not to enable the resultant licensees to invade the chosen fields of the Bell System. Royalties arising from these licenses are accounted for by the Bell System in such a manner as not to be directly associated with the costs incurred in developing and obtaining the patents from which they result.

CHAPTER 9

ENGINEERING AND STANDARDIZATION

Preceding chapters, describing the history of the Bell System, its scope, organization and fields of activity, and its research and development policies, have brought out clearly the fact that the Bell System as a public-utility enterprise is in many ways unique. It is a privately owned utility which supplies a Nation-wide, integrated service under unified management with centralized research, engineering, and manufacturing activities. In this chapter there are presented the more important results of the centralized research and engineering functions as they are embodied in the physical plant and operating procedure of the Bell System and hence affect wire telephone communications service in the United States.

The successful conduct of any enterprise of the magnitude of the American Co. "require(s) the raising and appropriation of large capital funds which compel predetermination and comparison of costs and service value. Only the engineer has the specialized knowledge necessary to the making of such computation."¹ This "predetermination and comparison of costs and service value" affords opportunities for great successes and for equally great mistakes. Interlocking operations, such as are essential to the operation of even the most elementary telephone-intercommunication systems, require such a uniformity of operating characteristics for successful operation that "standardization" becomes natural immediately and increasingly mandatory in scope as the magnitude and frequency of related instrumentalities and operations increase. "Standardization" is the prescription of tolerances and limits of dimension, and of operating characteristics, of interrelated devices and methods in such a manner and with such a degree of refinement as to assure the successful interaction of the components for the creation of a product or service acceptable to the user. This chapter describes a number of the outstanding problems of this kind occurring during the development of the American Co. to its present status.

Organization of Bell System Engineering and Standardization Activities.

Prior to 1907 the organization of and division of responsibility for engineering and standardization work of the Bell System was the result of uncoordinated growth, being carried on by the American Bell Telephone Co. and American Telephone & Telegraph Co., by Western Electric Co., and by certain of the subsidiaries.² In 1907 the engineering and standardization work was concentrated in the American Telephone & Telegraph Co. and the Western Electric Co. and the responsibility divided so that the American Telephone & Telegraph

¹ *Ency. Soc. Sci.*, vol. V, p. 543; parenthetical "s" supplied.
² Exhibit 1961-A, appendix J.

Co. engineering department was responsible for the planning and direction of new developments, and for standardization of new designs, while Western Electric Co. was responsible for the development and standardization of apparatus, for the preparation of detail central-office plans and for inspection of purchased materials. This rearrangement was made for the expressed purpose of saving the associated companies the expense of maintaining separate research organizations and of providing, in the parent company, a group of experienced engineers and operating men whose function was to work out problems common to the companies of the system and to make available to each the benefits of their combined experience. Full responsibility for planning and executing fundamental plans and traffic work remained with American Telephone & Telegraph Co.³ By 1918 the increasing diversity, number, and magnitude of problems made another rearrangement of functions desirable. This rearrangement resulted in the division of the American Telephone & Telegraph Co. engineering department into two departments, the department of operations and engineering and the department of development and research. The first of these departments concerned itself with the application of accepted or standardized apparatus and methods to the needs of the operating companies; the second of these departments concerned itself with the fundamental research and with development work necessary to solve the new problems arising, and to provide the new means and methods demanded by those solutions. Incidentally thereto, certain of the functions of the Western Electric Co. laboratory were shifted to the department of development and research. In 1925 those engineering functions of the Western Electric Co. relating to development and design of products as distinguished from manufacturing process engineering, were segregated in the Bell Telephone Laboratories, Inc. In 1934 the work of the department of development and research of the American Telephone & Telegraph Co. also was transferred to the Bell Telephone Laboratories, Inc. At present, therefore, Bell Telephone Laboratories, Inc., conducts all research, engineering, and development work forming the basis for standardization of telephones, telephone apparatus, etc.; the Western Electric Co. conducts the research and engineering work incident to manufacturing processes; and the department of operations and engineering of the American Telephone & Telegraph Co. performs the functions previously described.

The results of engineering and research carried out by the American Co., the Bell Telephone Laboratories and the Western Electric Co. appear in the Bell System in standardized types of apparatus and equipment and in standardized methods of operation which are made available to the associated companies through letters of instructions, printed data, handbooks, etc., and also by personal instruction and consultation on specific problems. This organization of technical activities in the Bell System places complete responsibility and authority with the American Co. management both for determination of the broad lines along which the research efforts shall be directed and also for the particular types of apparatus, equipment, and methods which are standardized for use by all Bell System companies.

The Bell Telephone Laboratories' telephone activities are directed along lines specifically authorized by the management of the American

³ Ibid.

Telephone & Telegraph Co., or by the Western Electric Co., which in turn works under the direction of the American Telephone & Telegraph Co. The nature and scope of telephone research and engineering work to be carried on by the Bell Telephone Laboratories, Inc., is determined largely by informal cooperation between the three groups, although final authorization of all projects rests with the officials of the American Telephone & Telegraph Co. The Bell Telephone Laboratories, with the advice and assistance of the American Telephone & Telegraph Co.'s department of operation and engineering and Western Electric, originates, adapts and applies new and improved materials and equipment for the Bell System. The department of operation and engineering studies the needs of the associated companies for new apparatus and systems, while the Laboratories keep in touch with the progress of science and engineering generally, both in this country and throughout the world. The department follows the progress of development work in the Laboratories, specifies service tests for completed models, and finally selects the product considered best suited for practical application to the telephone service. After a new article or system has been approved, the department of operation and engineering standardizes it, sends the Bell System companies circulars directing them where and how to use the new article and instructing them in its maintenance and operation, and authorizes Western to proceed with its manufacture.⁴

The Bell System plant and operations are highly standardized. Until an article has been standardized by the American Telephone & Telegraph Co., the Western Electric Co. does not manufacture it for the associated companies, except on special authorization for trial installations.⁵ The Bell System companies rarely buy nonstandard equipment, nor do they use nonstandard methods.

Advantages claimed for centralization of engineering activities and standardization.—Statements have been made by American Telephone & Telegraph Co. officials of the advantages of centralization of research and engineering services for the Bell System. These statements have usually been made in rate proceedings in support of an associated company's contentions as to the value of services rendered to it by the American Co. under the terms of the license contract. Specific references have been made in such statements to the savings in cost due to the avoidance of duplication of work by the individual associated companies, although no specific figures as to the amount of such savings have been disclosed. Estimates have been presented of the savings resulting from technical improvements in the telephone plant attributable to American Telephone & Telegraph Co. engineering effort. These savings, estimated as the difference between the cost of the existing Bell System plant and the cost of a plant which would give equivalent service using earlier types of plant and equipment, run into very large figures.⁶

The American Telephone & Telegraph Co. estimates of savings are predicated on the assumption that earlier types of plant would have been installed in sufficient quantities to give telephone service equivalent to that supplied by the Bell System at the later date. It is self

⁴ See affidavit of Harry P. Charlesworth, assistant chief engineer of the American Telephone & Telegraph Co., September 16, 1933, in the Wisconsin Telephone case, *Wisconsin Telephone Co. v. Public Service Commission of Wisconsin*, U. S. District Court for the Western District of Wisconsin, in Equity No. 2193.

⁵ *Ibid.*, pp. 248 and 249.

⁶ *Ibid.*

evident that the greater cost of the earlier types of plant would have made service extensions, to the extent actually made, impossible within the limits of what the subscriber did, or would, pay for the service.

In general, the claim is made that the furnishing of centralized engineering services and standardization by the American Telephone & Telegraph Co. has been the most effective and economical way of making the telephone invention useful to the public; that without this or some similar arrangement telephone service could not have been made good enough or cheap enough to exist on the scale on which it exists today; and that universal service and the telephone supremacy of the United States over the rest of the world have been due to this arrangement.⁷

The American Telephone & Telegraph Co. states that the Bell System organization and facilities for furnishing telephone service lead the world and that the service itself has universal acclaim as being the best and most reasonably priced in the world. System-wide, coordinated engineering and standardization are alleged to be largely responsible for this enviable condition.⁸ While the records examined do not disclose any factual support for the claim that Bell System telephone service is better and more reasonably priced than that furnished in any foreign country or by any independent telephone company in this country, there is no doubt that the quality of service is good. American Telephone & Telegraph Co. records indicate that Bell System engineers investigated the service in certain European cities and found the quality of service to be satisfactory on the basis of Bell System standards.⁹

The opportunities afforded by centralization of engineering and manufacturing activities and system-wide standardization for advancing the development of telephony and for improving service to the public are obviously substantial. Under centralized control over engineering and rigid standardization of apparatus, equipment and operating methods standards are developed as a result of the cumulative experience of the operating companies and of the work of a large group of specialists, whose entire time is devoted to improvements and cost reduction. The results of operating experience and of research and development are given Nation-wide application in the form of operating practices, methods, types of apparatus and communications systems, with information regarding their fields of use, all of which are made available to the operating companies. Thus in the Bell System the standardization function is performed by the general department of the American Co., which should be in the best position to determine what to standardize and when to standardize, since it has the opportunity to consider the common needs of the operating companies and to reflect the common experiences in technical developments. In the general department it is practical to maintain specialists on each individual phase of development and operation, whose duty it is to know the last word in their specialty. Studies and research can be conducted continuously, unhampered by the press of current operating responsibilities, and

⁷ See affidavit of Harry P. Charlesworth, July 1934, introduced in the *Wisconsin Commission case*, 2-U-34 (Federal Communications Commission Engineering Binder 700), pp. 5 and 6.

⁸ Brief of Bell System companies on the telephone investigation, pp. 61 and 63.

⁹ Report of committee on rotary machine switching system, Bell Telephone Laboratories File 3.012 (Federal Communications Commission Engineering Binder, vols. 702 and 711).

continuous contact can be maintained with progress and inventions in the communications art the world over.¹⁰ The types of apparatus and equipment resulting from this concentrated engineering effort are produced by the Western Electric Co., which functions as the manufacturing department of the Bell System. The Western Electric Co. is controlled by the American Co., and it is claimed that Western is guided by policies directed toward supplying telephone apparatus of the highest quality at reasonable prices.¹¹

The engineers of the special telephone investigation summarized the possible advantages of centralized control of engineering, standardization, and manufacturing as follows:¹²

(1) Interchangeability of equipment units and parts throughout the system, resulting in a reduction of supplies of spare and repair parts to a minimum, and the availability of the entire system's resources in case of local or national emergencies.

(2) Interchangeability of personnel, resulting in the possibility of rapid shifting of Bell employees and trained specialists to any part of the country or to any location where standardized Bell System equipment and methods are in operation.

(3) Uniformity of the national telephone service and the maintenance of a standard grade of telephone transmission in all parts of the country.

(4) Economy in manufacturing by the Western Electric Co. through limitation upon the number of different designs and types of equipment which must be produced.

(5) Control over changes in types of equipment or the displacement of older equipment by improved developments, thereby reducing the loss of plant investment due to retirements of property on account of obsolescence.

Possible disadvantages of centralized control of engineering, standardization and manufacturing.—No facts have been disclosed by the special telephone investigation which would establish a quantitative relationship between the centralization of control of engineering and standardization for the Bell System and the universality and quality of telephone service rendered by the Bell companies. Electric and gas utilities have been centralized to a large extent under holding-company management, but in neither of these fields does a single company have a dominant position equivalent to that held by the Bell System in wire telephony. Where only a limited section of the national utility service is controlled by each holding company, the degree of success or failure in performance by the expert management in each holding company can be evaluated by comparing the operating results of its subsidiary companies with those of other similarly situated groups. In the case of the American Telephone & Telegraph Co., a holding company which is unique in the fact that it controls practically all of the industry operating its particular kind of utility service in the United States, there is no comparative check of the excellence of its central management. In utility fields other than telephone, manufacturers competing for operating company business have carried on, to a large extent, the same type of research and engineering work which is performed in telephony by the American Telephone & Telegraph Co. and the Bell Telephone Laboratories. Work of this character cannot be considered, therefore, as essentially characteristic of centralized control of an entire industry or public utility field. For this reason it appears to be impossible to obtain factual proof of the extent to which the centralized engineering and standardization of

¹⁰ Brief of the Bell System Companies on the Telephone Investigation, p. 62.

¹¹ *Ibid.*, p. 81.

¹² See exhibit 2096-G, pp. 112 and 113.

the Bell System have been responsible for results, or that these results could not have been obtained equally well or perhaps better under competitive conditions between manufacturing organizations serving different and unrelated groups of operating companies.

There can be no question that the results of centralized management, be it good or bad, are greatly magnified and expanded by application to a Nation-wide system. The concentration of authority over so large a utility makes possible the Nation-wide dissemination of practices which may be against the public interest, especially where this interest may be at variance with that of the management and stockholders. The Western Electric Co., as a manufacturer of telephone apparatus and equipment, represents a large capital investment, which must be protected, and an important source of revenue for the American Telephone & Telegraph Co. Because of the continuing rapid development of the telephone art both within and outside of the Bell System, opportunities may arise where the authority of the parent company can be exercised to protect its investment in Western and in the Bell System companies from loss due to the introduction of new and improved types of equipment, and to increase system profits by limiting the telephone operating companies to the use of equipment manufactured by Western under its patents or patent rights, to the exclusion of improvements developed by others. Centralized control over engineering, standardization and manufacturing in the telephone industry may, in the opinion of the Investigation Staff, provide opportunities for the following acts:

- (1) Suppression of inventions and failure to follow up promising developments.

- (2) Failure to take advantage of improvements in the telephone art developed by others.

- (3) Installation of equipment of obsolete types during years when superior equipment was available from other manufacturers.

- (4) Sale to the associated companies of uneconomical and unduly expensive types of equipment developed by the parent company and manufactured by Western.

- (5) Advice or instructions to associated companies leading to the use of uneconomical types of equipment in order to avoid loss by the manufacturer.

- (6) Standardization of operating methods and operators' loads which requires the purchase of larger amounts of apparatus and equipment from Western and produces higher operating expenses than would be experienced if greater incentives existed for increasing operating efficiency.

In the absence of any other telephone system with which the Bell System can be compared, an examination of the results of the American Co.'s decisions and policies which affect the quality and costs of their telephone service is of interest in relation to the question of the extent to which the American Co. management has met successfully the responsibility placed upon it by its concentrated control over substantially the entire national wire-telephone communications service.

Development and Standardization of Important Types of Telephone Plant and Equipment.

Information on the activities of the American Telephone & Telegraph Co.'s departments of development and research and of operation and engineering and of the Bell Telephone Laboratories in the development, engineering, and standardization of important types of telephone plant and equipment has been drawn from the files of the American Telephone & Telegraph Co. and the Bell Telephone Laboratories and from affidavits of American Co. officials presented in rate cases, which described certain advances and improvements in the telephone art considered by them typical of centralized engineering activities. From these sources the following list of the more important Bell System developments in telephone plant and equipment has been compiled:

- Exchange cable development.
- Loading of cables and open-wire lines.
- Preservative treatment of timber.
- Contact metals.
- Desk stand and switchboard cords.
- Telephone repeaters and carrier transmission on toll lines.
- The hand telephone set.
- Manual central-office switchboards.
- Machine switching or automatic central-office systems.

The significant facts with respect to each of these developments are set out in the following subtitles:

Exchange cable development.—Telephone cables of the usual form now in use in the Bell System for exchange distribution consist of a lead-alloy sheath surrounding a large number of pairs of copper conductors, each wire being separated from all other wires by paper or pulp insulation. The development of telephone cables, carried on continuously by the American Telephone & Telegraph Co. and its predecessors since about 1888, has taken the form primarily of decreasing the size of wire and increasing the number of pairs of conductors contained in each sheath, of improving the insulation between wires within the cable, and of perfecting the composition of the lead-alloy sheath. The first cables contained but a few pairs and were insulated by various materials, such as rubber, gutta percha, and cotton, impregnated by various moistureproof compounds. These cables were useful for but short distances because of distortion of the speech sounds. Development of the present form of paper-insulated cable was begun about the year 1888. At that time only 50 pairs of 18-gage wires could be placed in a full-sized cable sheath. In 1892, 100 pairs of 19-gage wires was the limit in size. The use of 22-gage wires (having about two-thirds the diameter of 19-gage wires) began in 1901, when the 404-pair, 22-gage was manufactured. A 900-pair, 22-gage cable became available in 1912. The use of still smaller wires, the 24-gage size, began in 1914 with the design of a 1,212-pair cable. The present form of 26-gage cable with 1,818 pairs in a full-sized sheath was first manufactured in 1928. The great economy of concentrating a large number of small-gage wires within a single cable sheath is apparent. The American Telephone & Telegraph Co.'s engineers have estimated the savings due to all of these improvements,

since 1912, at about \$99,000,000.¹³ This saving, to a substantial extent at least, has enabled telephone service extensions to be made into otherwise unprofitable territories.

Loading of cables and open-wire lines.—Loading is a practical method for increasing the efficiency of transmission over telephone circuits by equipping them with inductance coils of special design spaced at regular intervals, having a proper relation to the coil inductance and to the wave length of telephone currents. The commercial development of loaded telephone circuits started about 1900, following the invention of the loading coil by Prof. M. I. Pupin, of Columbia University, in New York. The development of loading coils by the American Telephone & Telegraph Co. has centered largely upon improvement in the material forming the core of the coil. The wire core first used was supplanted about 1915 by the iron-dust core, which was in turn displaced in 1926 by loading-coil cores made of permalloy, a nickel-iron alloy, discovered by the Bell Telephone Laboratories staff. The improvements in core material have resulted in increased efficiency and a great reduction in the size of loading coils.¹⁴ The introduction of loading on open-wire circuits, after 1900, greatly expanded the economic range of open-wire long-distance telephone service, and reduced the costs of furnishing shorter-haul service by allowing the use of smaller gage conductors. Its subsequent use in cables continued the same effect and thereby contributed to the rapid extension of toll-cable facilities with improvement in the quality and reliability of service, resulting from the substitution of cable for open-wire facilities.

Preservative treatment of timber.—The rapid deterioration of wooden telephone poles and cross arms has been an item of large expense to telephone companies. Extensive research has been directed by the American Telephone & Telegraph Co. for many years to the preservative treatment of poles, cross arms, and wooden ducts for use in the telephone plant. As a result of tests carried on by the Bell Telephone Laboratories in the butt treatment of cedar and chestnut poles by immersion in tanks and the complete treatment of pine poles with creosote, methods have been standardized by which from 15 to 20 years have been added to the lives of cedar and chestnut poles; and yellow pine poles, which untreated could not be expected to give more than a few years' service, can now be employed with prospect of physical lives of well over 30 years.¹⁵ These increases in physical life, of course, have corresponding effects on the cost of rendering telephone service in those cases where the physical life of a pole controls its removal from service.

Contact metals.—The making and breaking of electrical circuits, through which telephone currents pass, is accomplished by means of contact points, which deteriorate due to the formation of electric arcs when the circuit is broken. Contact metals for telephone circuits have included such expensive metals as platinum and palladium. Development of less expensive metals and of improvements in design of the contacts by the American Telephone & Telegraph Co. and the

¹³ See affidavit of Harry P. Charlesworth, assistant chief engineer of the American Telephone & Telegraph Co., September 16, 1933, in the *Wisconsin Telephone case*, *Wisconsin Telephone Co. v. Public Service Commission of Wisconsin*, United States District Court for the Western District of Wisconsin. In Equity No. 2193, pp. 259 and 260.

¹⁴ *Ibid.*, pp. 260-263, 273.

¹⁵ *Ibid.*, p. 274.

Bell Telephone Laboratories has resulted in savings estimated by Bell System engineers at well over \$50,000,000.¹⁶

Desk stands and switchboard cords.—Improvements in materials and manufacturing processes in desk-stand cords have produced savings in cost estimated by American Telephone & Telegraph Co. engineers at about 25 cents per cord, applicable in the year 1933 alone to about 2,000,000 cord outfits produced in that year.¹⁷

In switchboard cords substitution of tinsel for a steel conductor and improvements and economies in cord tips, dyes used for the braid, and in insulating material and processes have produced savings to the associated companies estimated by American Telephone & Telegraph Co. engineers to amount to over \$5,000,000 per year.¹⁸

Telephone repeaters and long-distance carrier transmission.—Development of a successful vacuum-tube repeater between 1912 and 1915, which followed the invention of the three-electrode vacuum tube by Lee De Forest, made transcontinental long-distance telephony a commercial reality and laid the foundation for a subsequent broadening of the long-distance-telephone-service market. The savings, or cost reductions, due to the introduction of repeaters and carrier-current facilities, have never been computed and totaled by the American Telephone & Telegraph Co. Failure to present estimates of probable savings, or cost reductions, due to the repeater and carrier-current development may, perhaps, be due to the circumstances that repeater and carrier equipment has, until recently, been used predominantly by the long-lines department which has never participated in any formal rate proceedings. The later development of carrier transmission, whereby a number of messages can be transmitted simultaneously over the same conductors by the use of radio frequencies, has resulted in large savings in telephone pole, wire, and cable plant.¹⁹

The hand-telephone set.—It is not generally known that the hand-telephone form of instrument, recently reintroduced in the Bell System, has been in existence in one form or another from the very earliest days of telephony. The original Bell hand telephone of 1876, when used alternately as transmitter and as a receiver, was in itself a hand-telephone set. Shortly thereafter patents were issued on hand-telephone sets consisting of two of these early Bell telephones mounted upon a common handle to serve the same purpose and with the same convenience objective inherent in the present-day type of hand-telephone set. In 1878 Robert G. Brown, chief operator of the Gold & Stock Telegraph Co. (which was Western Union's subsidiary competing with the Bell group for control over the telephone industry), invented the first hand-telephone set combining a battery transmitter and a magnetic receiver. The year following the Western Union contract of 1879, by which the Bell group took over the Gold & Stock telephone business, Brown went to Paris as electrical engineer for the organization then introducing telephone service in France, and introduced his hand-telephone set into the exchange which he helped establish. By 1882 Chief Engineer Barthou, of the same organization,

¹⁶ These estimated savings, or cost reductions, affect the extent to which telephone service extensions can be made into otherwise unprofitable territories. See affidavit of Harry P. Charlesworth, assistant chief engineer of the American Telephone & Telegraph Co., Sept. 16, 1933, in the Wisconsin Telephone case, *Wisconsin Telephone Co. v. Public Service Commission of Wisconsin*, United States District Court for the Western District of Wisconsin, in equity, No. 2193, p. 278.

¹⁷ *Ibid.*, p. 279.

¹⁸ *Ibid.*, p. 280.

¹⁹ A further discussion of repeaters and related instrumentalities will be found in ch. 8, *supra*, pp. 222-224.

had developed a lighter and simpler set which became popular with French telephone subscribers, and from that time on the hand-telephone set was considerably improved in appearance, size, and convenience, and was installed in Europe generally. In this country, during the competition between the Bell group and the Western Union, prior to 1879, for control over the telephone industry, Western Union had used Edison's transmitter, which operated on a microphonic rather than a magnetic principle, and was far superior to the original Bell instrument (quite similar to the present-day desk-stand-set receiver), which was used both as transmitter and receiver. The Bell group subsequently obtained and introduced the so-called Blake transmitter, also operating on microphonic principles. The Blake transmitter apparently was not so well adapted for hand-set use as the Edison transmitter. When the Bell group obtained control of Western Union's telephone equipment and installations, following the Western Union agreement of 1879, the Edison transmitters were retired and replaced by Blake transmitters, and the hand-telephone set was abandoned by the Bell group as a standard instrument for use in this country.

Due to the requirements of the Army and Navy for a mobile set, the hand-telephone set continued to be the subject of some study by the American Co., but it was not until 1903 that hand-telephone-set development work again was undertaken on a comprehensive scale, under the aggressive leadership of Hammond V. Hayes, then chief engineer of the American Co. At this time independent telephone operating companies were in the ascendency and independent telephone manufacturers were offering hand-telephone sets for introduction into service by the independent group. Late in 1903 the first lot of Bell System hand-telephone sets was manufactured and deliveries to the associated companies began in 1904. At that time the American Co.'s patent attorney, T. D. Lockwood, gave his opinion that the combination of a transmitter and receiver in a single appliance was old and well known in the art and that the construction was not patentable.

During 1904 the associated companies were asked for their opinion as to the desirability of this set and out of the 24 replies received 20 were commendatory, while 3 questioned the desirability of introducing this type of equipment. Of these three, one was from John J. Carty and another was from U. N. Bethell, both of the New York Telephone Co. By the following year manufacture of this type of instrument by Western Electric had been approved and an order of 1,000 sets was placed in production on an experimental basis. The delivery of early models of this set accelerated the demand for them by associated companies, several of which were particularly insistent upon obtaining this type of equipment. Subsequent minor production difficulties were eliminated and by the end of 1906 Western was prepared to produce these sets on a quantity basis. By July 31, 1907, 3,020 hand-telephone sets had been shipped to Bell System associated companies by Western.

Reorganization of the American Co.'s management occurred during the early part of 1907,²⁰ and in April of that year Theodore N. Vail replaced Frederick P. Fish as president of the company. Vail made drastic changes in the organization and personnel of the American

²⁰ This reorganization and change in control of the American Co.'s management is described more in detail in ch. 4, pp. 91-93.

Co.'s engineering departments, replacing Chief Engineer Hammond V. Hayes with John J. Carty, who had been one of Vail's associates during his early connection with the Bell System. The day following his appointment as chief engineer, J. J. Carty took immediate and forceful steps to prevent the general introduction of this new form of hand-telephone set and eventually called in or replaced most of those instruments which had been developed and introduced by his predecessor.

The introduction of the mechanical repeater, and later of the vacuum-tube repeater (between 1912 and 1913), emphasized the unfavorable reaction on telephone transmission efficiency and intelligibility of certain distorting effects inherent in the basic design of the transmitter and receiver types which had been in use since about 1895. This led, in 1915, to the consideration²¹ of the effects of "quality" on the efficiency of communication. This consideration involved (1) the determination of the amount of distortion in different parts of the complete circuit, including the transmitters, repeaters, circuits, and lines; (2) the development of a method of determining experimentally the effect of a given amount of distortion on intelligibility.²² Preliminary studies showed that very substantial savings in the costs of other parts of the plant could be effected by relatively slight improvement in the efficiency of telephone instruments,²³ and by 1917, it had been determined that most of the distortion of quality in subscribers' loops occurs in the transmitter and receiver.²⁴

Subsequent studies showed by 1917 that the quality requirements essential for the desired improvements in transmission would necessitate a rather thoroughgoing redesign of the transmitter structure with radical changes.²⁵ At that time it also became evident that this redesigning would involve the transmitter, receiver, and substation circuit, and the possibility of great savings as a result of redesign of the exchange cable plant.²⁶ The work carried on in connection with this development suggested possibilities in connection with the development of a hand set to replace or supplement the existing wall set and desk-stand types of instrument, because the hand-set form would control the separation between the mouth of the speaker and the transmitter, and would avoid the degrading effect on transmission of the increase in this separation incident to subscribers' use of the older forms.²⁷ The control of the speaking distance in the hand-telephone set makes possible the control of many other variables of importance in the design of efficient and economical telephone communication systems.

²¹ See exhibit 293, p. 60, ff. for detail history.

²² Bell Telephone Laboratories, Inc., joint operation and engineering and development and research file No. 2925, vol. 1A, entitled "Speech Characteristics," memorandum entitled "Comments Concerning Conference of Messrs. Osborne, Colpitts, Jones, Arnold, and Frederick," dated March 20, 1915.

²³ Bell Telephone Laboratories, Inc., case file No. 30943-1, vol. A.

²⁴ Bell Telephone Laboratories, Inc., operation and engineering file No. 3286, entitled "Uniform Transmission," vol. I, memorandum for file by H. S. Osborne, dated August 7, 1917.

²⁵ Bell Telephone Laboratories, Inc., case file No. 30943-1, vol. A, entitled "Improved Substation Transmitters," memorandum Chief Engineer E. B. Craft to C. R. Barney, dated July 12, 1917.

²⁶ Bell Telephone Laboratories, Inc., operation and engineering file No. 3286, entitled "Uniform Transmission," vol. I, memorandum Bancroft Gherardi to F. B. Jewett, dated August 31, 1917. In 1917 Mr. Jewett was assistant chief engineer of the American Telephone & Telegraph Co.; at the present time (1936) Mr. Jewett is president of the Bell Telephone Laboratories, Inc. In 1917 Mr. Gherardi was plant engineer of the American Telephone & Telegraph Co.; at the present time (1936) Mr. Gherardi is vice president of the American Telephone & Telegraph Co.

²⁷ Bell Telephone Laboratories, Inc., operation and engineering, development and research file No. 3567, entitled "Development of Improved Substation Apparatus," memorandum by H. S. Osborne, dated April 27, 1918. Bell Telephone Laboratories, Inc., case file No. 30944, "Case Closing Survey Report" dated December 31, 1928.

Western devoted continuous effort toward the development of a hand telephone set from 1917 until about 1924, when the development effort was accelerated by offers of hand telephone sets made by small independent concerns in this country for purchase and attachment by Bell System subscribers. Subsequently, Western completed a preliminary model which was placed in operation in the offices of major executives of the American Co., whereupon it was discovered that the instruments as then developed became inoperative when held in certain positions. The instrument was redesigned under considerable pressure and was first made available for introduction into associated companies' plants in 1927. This early hand telephone set developed structural defects and by 1934 its transmitter was redesigned, in its present form. In the meantime, however, excessive maintenance expenses were caused by the defective transmitters, and heavy obsolescence costs were incurred on account of early replacement of the large number of handsets of the older design, which had been standardized and introduced into the associated companies' plants. The antisidetone circuit is an arrangement whereby the transmitter, receiver, and associated apparatus of each station are so connected as to restrict, as much as possible, the effect of sounds entering the transmitter of a station on the receiver of the same station.²⁸

Complete patent control over the antisidetone circuit²⁹ has been held by the Bell System since 1890, when the fundamental patent was purchased. This early patent protection was strengthened at intervals by additional patents secured by the Bell System on improvements. In the period 1904-6, Dr. Campbell, of the American Co., proved mathematically that the desirable antisidetone feature could be obtained in circuits which were electrically just as efficient as those then in use by the Bell System. Despite acknowledgment by Bell System engineers of the greater desirability and superiority of the antisidetone circuit, no development work, to adapt it for use on subscribers' stations, was undertaken until some 10 years later, about 1916. The early development work included studies to determine the possible alternative circuits, on all of which the Bell System applied for patents, which were issued in 1918. Dr. Campbell's mathematical analyses were verified experimentally and antisidetone circuits were developed and installed with success on telephones used by Bell System central office operators. This desirable improvement was not standardized by the American Co. for use by the public until 1937, as a feature of the new combined set. The antisidetone circuit has been obtainable on special order at an increased price since 1934. Independent telephone manufacturers had been able, apparently without infringing Bell System patents, to make subscribers' sets using antisidetone circuits commercially available for use in subscribers' equipment since 1925.³⁰

The combined handset,³¹ in which the auxiliary equipment and circuits otherwise enclosed in a separate housing, or Bell box, on the

²⁸ Bell Telephone Laboratories, Inc., case file 30943-1, vol. C, entitled "Improved Substation Transmitter," memorandum from H. F. Dodge to C. R. Moore entitled "Improved Substation Transmitter," dated December 7, 1921.

²⁹ Sidetone may be described nontechnically as the sound which occurs in the subscriber's receiver as a result of sounds entering his own transmitter. Sidetone is undesirable both because of its annoying effect upon the subscriber and because of other effects upon the economy of telephone transmission.

³⁰ See exhibit 2096-G, p. 139.

³¹ Also called "bell-in-the-base" handset or "monophone."

subscriber's premises is contained in the handset mounting, has been in use in Europe ever since the beginning of telephony. This form of subscriber station apparatus was made commercially available in America by an independent manufacturer³² in 1925. Shortly thereafter, similar sets were put on the market by other independents. The American Co. began the introduction of the combined handset to Bell System subscribers in 1937, or 12 years after this form of set was available on the independent market. No systematic replacement of the old type handset with separate bell box, most of which have been installed since 1928, is contemplated, and it is anticipated by the company that the old form of instrument will continue to serve Bell subscribers until removed in the course of the normal conduct of business.³³

Manual central-office switchboards.—The earliest central-office switchboards were of the magneto type, wherein current for the transmitter was supplied by batteries located at the subscriber's premises, and signaling was performed by turning a crank on a magneto generator. Switchboards of this type have been furnished to the licensee companies by the Western Electric Co. since 1880. The common battery manual system, wherein the electrical current required for signaling the operator and for actuating the transmitter in the subscriber's instrument is supplied from the central office, is in use today in most of the larger cities in the United States, which have not been converted to automatic operation. The first manual multiple common battery switchboard of the type now known as the Western Electric No. 1 was installed at Louisville, Ky., in 1897, and was thereafter used as the standard Bell System manual equipment for all large exchanges until it was superseded by the standardization of the No. 11 switchboard in 1924 for use in manual-office areas, and at earlier dates by the panel and step-by-step machine switching equipment for use in dial office areas.³⁴ The major improvement in the No. 1 switchboard for the smaller multi-office and single-office exchange areas, developed between 1908 and 1916, consisted in the application of keyless machine ringing of the called party from the subscriber's switchboard. Switchboards containing this improvement were standardized in 1916 as the No. 1-C switchboard. The improved No. 1 switchboard is still manufactured by the Western Electric Co. for additions to existing offices.³⁵

About 1914 independent telephone manufacturers introduced a so-called "feature" manual switchboard which combined a number of operating features which individually and alone were found scattered throughout the prior art. This switchboard was a great improvement over the type of manual central office equipment then in use in the Bell System,³⁶ and was capable of average traffic loads considerably greater than those carried by types of manual equipment then available.³⁷ The American Co. did not begin a serious

³² The Automatic Electric Co. of Chicago. See exhibit 2096-G, p. 139.

³³ American Telephone & Telegraph Co. comments on exhibit 2096-G, vol. 37, p. 50.

³⁴ Other types of manual common battery switchboards, such as the No. 8, No. 9-C, No. 9-D, and No. 10 are adaptations of the No. 1 type to exchanges of various sizes. Although they contain minor modifications, their operation is essentially the same as that of a No. 1 switchboard. These switchboards have been superseded by the No. 11 and No. 12 switchboards for new installations.

³⁵ Information transmitted by the American Telephone & Telegraph Co. to the Federal Communications Commission with letter of Keith S. McHugh, assistant vice president, dated August 5, 1936, contained in binder No. 700 in the Federal Communications Commission files.

³⁶ See opinion of the district court in the case of *Kellogg Switchboard and Supply Company v. Michigan Bell Telephone Co. and American Telephone and Telegraph Co.*, in Equity No. 4459, United States District Court, Eastern District of Michigan, Southern Division, quoted in part in exhibit 2096-G, pp. 143-146.

³⁷ See exhibit 2096-G, pp. 141-170.

investigation of the combined advantages of the "feature" switchboard until about 1921 and did not make this improved type available to its controlled associated companies until 1924, or 10 years after it had been made available by independent manufacturers. Since 1914, the Bell System associated companies, operating under the control and in accordance with the standards prescribed by the American Co., have purchased from Western over 900 switchboards of types rendered obsolete³⁸ by the more economical switchboards then available from independent manufacturers.

Machine switching or automatic central office systems.—Systems employing mechanical devices for central-office switching or the establishment of connections between telephone subscribers have been contemplated since the earliest days of telephony. In 1879, within 3 years after the first telephone was patented by Bell, an automatic switching system was devised by Daniel Connolly, T. A. Connolly, and J. T. McTighe, but was not practically successful. In 1889 Almon B. Strowger invented the device which developed into a successful automatic switching system and which has been used extensively all over the world under the name "Strowger" or "step-by-step" equipment. Since that time mechanical switching schemes have received considerable attention from numerous inventors and many systems have been proposed.

In general, the automatic systems which have been successfully exploited and which have had extensive application can be classified according to the types of equipment and circuits employed:³⁹

1. Systems employing electromagnetic switches.
2. Systems employing selectors operated from a continuous power drive.
3. Systems employing relays predominantly.

The first practical system of automatic switching, the Strowger or step-by-step system, employs electromagnetic stepping switches. This system is primarily the development of the Automatic Electric Co. of Chicago and its predecessors. The fundamental switch presently employed is one having a vertical and rotary movement. The principal companies which manufacture equipment of this type are the following: Automatic Electric Co. of Chicago; Automatic Telephone Manufacturing Co., Ltd., of Liverpool, England; Siemens and Halske, of Berlin, Germany; Siemens Bros. & Co., Ltd., of Woolwich, London, England; and the Western Electric Co.

The principle of employing switches actuated by shafting from a continuous power drive was first employed in the "Lorimer" system. This system, however, was not extensively used. The "panel" and "rotary" systems employing continuous power drive have been manufactured principally by the Western Electric Co. and International Standard Electric Co., respectively. The sequence of operations in the panel system is much the same as in the rotary system.

The all-relay automatic system was developed by the North Electric Manufacturing Co. of Galion, Ohio, and its predecessor and was put on the market in 1918. The coordinate system developed by the Swedish Telephone Administration and the Western Electric crossbar

³⁸ Equipment is here termed obsolete if there is available at the time in question equipment of improved design which will give better service at no greater cost, or will give equivalent service at lower cost.

³⁹ Several systems have also been devised which employ a combination of several of these principles.

system also fall in the classification of systems employing relays predominantly.

Step-by-step automatic system.—Many early installations of step-by-step automatic equipment were made by independent telephone companies in this country and by foreign telephone systems. The American Telephone & Telegraph Co. first became actively interested in step-by-step systems in 1912. Many successful independent step-by-step exchanges had been in operation since 1904. The early installations included Grand Rapids, Mich.; Columbus, Ohio; Western, R. I.; Lincoln, Nebr.; Defiance, Ohio; and St. Paul, Minn.; and the Bell System itself obtained experience with a number of step-by-step offices acquired from independent companies after 1912. In 1915 the Bell System owned and operated 91,000 stations of step-by-step plant.⁴⁰ The step-by-step system, however, was not standardized by the American Telephone & Telegraph Co. until 1919, when its use was authorized for small multioffice and single-office cities of the Bell System.⁴¹

In 1922 an additional type of switch for use with the step-by-step system, known as the "director", was developed by the Automatic Electric Co. of Chicago. The addition of the director made practical the use of the step-by-step system in large multioffice-exchange areas, and it has been installed in London, England, and Habana, Cuba. The use of the director in connection with step-by-step systems has not been adopted by the American Telephone & Telegraph Co.

About 1916 independent telephone manufacturers had developed a so-called "unattended" automatic exchange which was designed to improve service and reduce operating expenses in small communities.⁴² These exchanges were of the step-by-step type, manufactured by the Automatic Electric Co., and of the all-relay type, manufactured by the North Electric Manufacturing Co., of Galion, Ohio. Although these types of exchanges have been used extensively by independent telephone companies since 1916, the American Co. did not make this type of central-office equipment available to the controlled associated companies until 1930, or some 14 years after this development had been in use by independent operating companies. The Bell System companies for the last few years have been pursuing an active program of replacement of small manual magneto and common battery central offices with unattended automatic equipment where conditions were suitable. Investments in manual central-office equipment at locations suitable for unattended dial operation were made by Bell System companies during the 14 years after the unattended automatic exchange equipment was available on the open market.

The so-called cordless or "semiautomatic" toll board and "direct dialing" by subscribers over toll lines, using step-by-step automatic equipment, were made commercially available by the Automatic Electric Co. about 1928. The Bell Telephone Laboratories is working on the application of these improvements to the Bell System plant, and subscriber toll dialing is now used to a limited extent. The intro-

⁴⁰ American Telephone & Telegraph Co. comments on exhibit 2096-G, vol. 37, p. 80.

⁴¹ The American Co. had previously expected to use panel equipment for all central offices in which dial equipment was justified, but by this time had concluded from cost studies that it would be uneconomical for use in the smaller multioffice and single-office areas.

⁴² See exhibit 2096-G, pp. 180-195.

duction of improved automatic types of toll equipment into the Bell System plant will either be delayed or be rendered more costly by the existence of large recent investments in the older forms of manual toll boards. Many of these toll boards were purchased from Western and installed in the Bell System plant after the improvements had been developed by the independent manufacturer and were available in the open market for purchase by Bell System associated companies.⁴³

Panel-type automatic central-office equipment.—About 1900 the American Telephone & Telegraph Co. began the active investigation of automatic switching of telephone connections. This work was carried on in collaboration with the Western Electric Co., and two systems were developed, the rotary and the panel. The fundamental switch employed in the rotary system has, as its name implies, a rotary movement only. In the panel system the fundamental switch is one which has a vertical movement only, the selector moving over contacts arranged in a flat bank or panel, from which is derived the name of the system.

The development of the rotary type of switch proceeded somewhat faster than the panel type, and a trial installation of the rotary system was made by the Western Electric Co. in 1910. In 1911, due to competition encountered by the Western Electric Co. in its European sales from manufacturers of automatic and semiautomatic equipment, the Bell management decided to begin the manufacture of automatic equipment in Europe but continued to recommend manual operation in the United States until 1917. The manufacture of the rotary type of equipment was transferred to the European branch of the Western Electric Co. in 1911, and further development, sale, and use of this equipment have been outside the United States.⁴⁴

The development of the panel dial central-office equipment was continued by the American Telephone & Telegraph Co. and the Western Electric Co. in this country. It has been used so extensively by the Bell System in the larger cities of the United States and forms such a large part of the total Bell System investment that a rather detailed presentation of the facts and factors leading to its adoption by the American Telephone & Telegraph Co. appears to be warranted.

American Co. management's early decision upon a panel-dial program.—Prior to 1917, when panel dial was adopted for use in all larger cities,⁴⁵ the experimental work and field trials of the panel-type automatic equipment took the form of semimechanical operation, in which the dialing operation now performed by the subscriber was done by the telephone operator. Trial installations of this kind made in several New Jersey central offices indicated that this method would prove too costly for general use, and effort was directed thereafter to effecting full automatic operation.

Proposed standardization of panel-dial equipment was discussed at an executive conference of the American Co., held in November 1916, and it was announced at the general engineering conference of the Bell System, held the following month, that full mechanical equipment had been perfected and was available for all but the largest cities,⁴⁶ for which semimechanical operation was thought more suitable.

⁴³ See exhibit 2096-G, p. 298.

⁴⁴ See exhibit 2096-G, pp. 66 and 67, and American Telephone & Telegraph Co. comments on exhibit 2096-G, vol. 37, p. 79.

⁴⁵ See exhibit 2096-G, p. 209.

⁴⁶ The use of full mechanical equipment in the larger cities was excluded at that time because of anticipated dialing difficulties.

The decision to adopt panel-type full automatic equipment resulted from a comparative cost study which apparently indicated that it could be operated at lower cost than the manual system. The Bell System was committed initially to the panel-dial program on September 13, 1917. At that time U. N. Bethell, senior vice president of the American Co. advised John J. Carty, chief engineer of the American Co., of President Vail's approval of his recommendation, that Western make preparations ⁴⁷ for the production of panel equipment to the extent of 100,000 lines of full mechanical central-office equipment and 10,000 lines of private-branch-exchange mechanical equipment annually.

The more important cost comparisons which were before the American Telephone & Telegraph Co. executives at the time of their decision to adopt panel equipment contain the following estimates: ⁴⁸

American Telephone and Telegraph Co. estimates of panel-dial and manual central-office equipment costs made during the period 1912-18

Year	Study	Cost per line equipped	
		Panel dial	Manual
1912	Single-office area.....	\$18. 83	\$14. 87
	Multioffice residential area.....	19. 76	16. 05
	Multioffice business area.....	27. 75	25. 06
1915	Murray Hill office, New York.....	50. 27	35. 87
1916	Multioffice areas:		
	Murray Hill office, New York.....	61. 00	-----
	Audubon office, New York.....	45. 00	-----
	Rector office, New York.....	64. 00	-----
	Main office, Milwaukee.....	48. 00	-----
	Kilbourne office, Milwaukee.....	38. 00	-----
	Single-office areas:		
	3,000-line office.....	41. 13	21. 00
	5,000-line office.....	39. 70	20. 40
	10,509-line office.....	35. 98	23. 38

The effects of increased labor and material costs and changes in design were apparent in 1920 when on October 29 Western furnished to the American Telephone & Telegraph Co. for the first time detailed prices of panel-type automatic apparatus and equipment. The average price for panel equipment for 24 central offices was raised to \$131 per line, and for the equivalent manual equipment to \$62 per line. ⁴⁹ This amounted to an increase of about 82 percent for the panel dial and about 48 percent for manual over the 1916 prices upon which the adoption of the dial-conversion program was based.

In comparison with manual central-office equipment, a panel-type automatic central office is more expensive initially, requires more costly buildings, and is more expensive to maintain. These higher costs tend to be offset by reductions in traffic expenses due to automatic operation, which eliminates a large number of the telephone switchboard operators required for manual-exchange operations. The approval for the manufacture of 100,000 lines of panel equipment annually was based upon estimated annual savings for automatic as compared with manual equipment of \$5 per line per year on the basis of 1916 wage schedules and \$7 per line per year if operator's wage

⁴⁷ Manufacturing preparations include acquisition and installation of the highly expensive machine tools required for continuous mass production.

⁴⁸ See exhibit 2096-G, pp. 245 to 262, inclusive.

⁴⁹ See exhibit 2096-G, p. 223.

rates were later increased by 25 percent.⁵⁰ According to this estimate the increased profits made available by traffic savings under this program, over and above increased maintenance, depreciation, and interest on additional investment, would amount to a total of \$26,905,000 during the period 1919 to 1926, inclusive. Plans for the panel-dial program took shape rapidly. It was estimated in 1919 that 15 years would be required to complete the change from manual to panel-type automatic central-office equipment in multioffice areas, and the Western Electric Co. was authorized to prepare for the production of 260,000 lines per year.

There is evidence that shortage of operators and high wages due to war conditions in 1918 and 1919 caused the plans for automatic operation to be pushed more rapidly than might otherwise have been the case. The original decision to adopt panel-type, full mechanical equipment was made before the serious employment difficulties developed, and the first installations were not completed until after the emergency had passed. The situation in the Middle West is indicated by letters exchanged between Mr. B. E. Sunny, president of the various companies comprising the central group of Bell Telephone companies, and the American Telephone & Telegraph Co. officials following a conference in New York in January 1919, where the machine-switching program for Chicago was discussed. On March 28, 1919, Mr. Sunny wrote Mr. Thayer, then vice president of the American Co., in part as follows:⁵¹

When I took up the matter of equipping Detroit with machine-switching apparatus with Colonel Carty about a year and a half ago, he expressed no opinion as to the advisability of such a course but said that it could be furnished us if we wanted it. I did not find that any of the executive officers in New York were in favor of the plan, and as my own people were against it, I dropped it.

The stress of the war condition expressed by the shortage in operators and high wages evidently brought the subject up again, and the policy that you outlined in January was no doubt largely influenced thereby. There is now a marked change, and we are getting back experienced operators and will soon have only the question of wages to deal with. In Cleveland, because of the falling off in traffic of 40 percent due to the adoption of measured rates, we will close the operators' school on the 1st of April. In Chicago we have 100-percent force, and the quality is improving every week. The same situation no doubt prevails pretty much all over the country. The ending of the war and measured rates in place of flat rates will relieve many of the bad situations.

When we took up the semimechanical, we tried it out in two offices in Newark, with the result that the engineers say that it has not proven in. It would have been a great disappointment if, instead of limiting the experiences to Newark, similar installations had been put in in half a dozen or more cities.

I think we should proceed in the same deliberate way in this case, rather than on a plan that is un-Bell and, I am afraid, unsafe. If we attempt to jam it through we may find ourselves in serious difficulty in several important communities at the same time, with the result that we might be able to keep in service such machine switching as had been already installed but could proceed no further.

Mr. Thayer's answer to Mr. Sunny of April 28, 1919, recites the claimed advantages and economies of panel equipment and contains the following statement:⁵²

We have recognized your lack of sympathy with this program, and it has given us, and is giving us, some uneasiness about the Chicago situation.

The difficulty, which we see and appreciate, is in introducing a new type of service in Chicago for which we want the approval of the Chicago public under an administration of the Chicago Telephone Co. which does not give it its un-

⁵⁰ See exhibit 2096-G, p. 210.

⁵¹ See exhibit 2096-G, pp. 214 and 215.

⁵² See exhibit 2096-G, p. 216.

qualified approval. There is no doubt in our minds as to the correctness of the program we have urged. There is no doubt in our minds but what it is possible to make the change with the approval of the Chicago Public. We hope that you will be able to satisfy yourself and the board, and at the right time the public, that the proposed program is the right one.

Mr. Sunny wrote Mr. Thayer on May 23, 1919, acknowledging the American Telephone & Telegraph Co.'s decision to use panel equipment in Chicago, as follows:⁵³

If the decision of the American Telephone & Telegraph is that machine switching shall be used in Chicago, the representatives of our commercial department ought to go to New York right away and take up a number of difficult problems that seem to arise in connection with the four-party coin-box service. * * *

Results of early installations of panel-dial equipment.—Detailed specifications for the first complete panel-dial central office which was to replace the existing Douglas-Tyler central office in Omaha, Nebr., were supplied to the Western Electric Co. on March 20, 1918. Approval of this installation was based upon an estimated cost to the associated company of \$79 per line for 13,920 lines⁵⁴ and an estimated annual saving as compared with manual operation of \$4.90 per line.⁵⁵ The actual installation was not started until 1920 because of national conditions. During the period from 1918 to 1922 prices of raw materials and wage rates increased rapidly. This condition, together with additional equipment, which it was found was required to make panel-dial central offices operative, and original underestimates of costs to the associated companies resulted in considerable differences between originally estimated costs and costs actually incurred by the associated companies for completed installations. For instance, the American Telephone & Telegraph Co.'s original estimate for the Omaha office prepared in 1918 provided for 13,920 lines at a cost, to the associated company, of \$1,096,000, or an average of \$79 per line. In 1920, it was estimated that Western's price would amount to \$111 per line. Western reported a final cost, exclusive of any profit, on the Omaha job of \$179 per line, or just \$100 per line more than the cost, to the associated company, estimated in 1918 by the American Telephone & Telegraph Co. The Western Electric Co. billed the Northwestern Bell Telephone Co. \$1,895,000 for 13,494 lines installed, or \$141 per line, and reported a manufacturing loss of \$517,000, or \$38 per line. The Northwestern Bell Telephone Co. paid for the Omaha equipment 78 percent more than the price originally estimated.

This difference had a serious effect upon the estimated savings per line which had been anticipated from the substitution of panel-dial equipment for manual equipment in the Douglas-Tyler office. After the panel-dial equipment was working satisfactorily, the chief engineer of the Northwestern Bell Telephone Co. concluded that instead of a saving of \$4.90 per line per year, or a total saving for the period 1923 to 1926 of \$265,000, a loss would result from the use of panel-dial instead of new manual equipment in replacing the Douglas-Tyler office amounting to approximately \$14 per line per year, or a total loss from 1923 to 1926 of approximately \$750,000.⁵⁶

While the Omaha central office was the first panel-dial machine-switching equipment to be put into service, other offices were being

⁵³ *Ibid.*, p. 217.

⁵⁴ See American Telephone & Telegraph Co. operation and engineering department file 3415, vol. 1, p. 392.

⁵⁵ See exhibit 2096-G, pp. 224 and 225.

⁵⁶ *Ibid.*

installed, on which the amount billed the associated company and the Western Electric Co. calculated cost materially exceeded the estimated prices upon which the use of panel-dial equipment had been approved. For example, the American Telephone & Telegraph Co. estimated in 1919 that the cost, to the New York Telephone Co., of 7,000 lines of panel-dial equipment for Academy office, New York City, would amount to \$553,000, or \$79 per line. Installation work was in progress during the period from 1920 to 1922. Western billed the New York Telephone Co. \$1,142,000, or \$171 per line, for 6,700 lines installed, and reported a net loss of \$460,000, or \$69 per line. This cost per line to the Western Electric of this office was therefore over 300 percent of the price to the New York Telephone Co. estimated by the American Telephone & Telegraph Co. in 1919.⁴⁷ Other early installations of panel-dial equipment were made at Seattle, Wash., where three small central offices were placed in service early in 1923. The American Co.'s estimated price to the Pacific Co. for this installation was \$549,000; the Pacific Co. was billed \$883,000, representing an increase of 60 percent over the estimated price; Western Electric's calculated loss was \$504,000, nearly equal to the original estimate; the total calculated cost, again excluding any profit to Western, was \$1,387,000, or a little over 250 percent of the price originally estimated by the American Co. For all panel offices completed prior to December 31, 1923, Western billed the associated companies \$26,253,000. Western reported costs for the offices, exclusive of any profit, amounting to \$35,575,000, or 136 percent of the billed price.

In addition to the Bell System associated company installations described above, one independent telephone operating company became involved in the American Co.'s program of installation of panel-type central-office equipment.

The Kansas City Telephone Co., an independent owned by Theodore Gary & Co. which also owns the Automatic Electric Co., had acquired the Southwestern Bell Telephone Co.'s property in Kansas City in August 1919, after the latter had placed an order with Western for panel-type machine-switching equipment. The Kansas City Telephone Co. demanded that the equipment be furnished at the original price (\$95 per line) stipulated by Mr. Gherardi of the American Co. in connection with the sale of property, and refused to pay Western the amount which it had billed the company, approximately \$172 per line. The resulting controversy was finally settled when, in 1924, the Southwestern Bell Telephone Co. repurchased the Kansas City property, and the dial equipment under discussion became a part of the latter's plant. Western Electric Co. equipment was billed at slightly more than \$180 per line for this office and Western reported a cost (without profit) of approximately \$230 per line. The critical analysis of this installation, made by the independent management which refused to accept the program, was so much in contrast with the general attitude of the American Co.'s controlled associated company management that it is of interest to include quotations from a significant letter indicating resistance of the management of an independent telephone-operating company against an increase above a previously stipulated figure. H. L. Harris, vice president of the Kansas City (independent) Telephone Co., wrote Mr. J. D. Kennedy, merchandise

⁴⁷ Ibid., p. 229.

manager of the Western Electric Co., a letter date March 30, 1922, from which the following is quoted:⁵⁸

At the time the Kansas City Telephone Co. acquired the Southwestern Bell Telephone Co.'s property in Kansas City (August 1, 1919), the Southwestern Co. had an order with the Western Electric Co. for panel type machine switching equipment totaling 5,890 lines, covered by Western Electric order No. 862050 and being constructed in accordance with Western Electric specifications No. 7891, dated June 29, 1918.

As this unit of machine switching equipment had been engineered for the replacement of the then existing main (manual) office of the Bell System and as the Kansas City Telephone Co. in acquiring both the Bell and the Home properties in Kansas City with the intent to merge them into a single system, there developed the question of the adaptability of this mechanical unit for the merged system.

Mr. A. F. Adams, president of this company, was given the option of canceling the order for this mechanical equipment by paying a cancellation charge to be agreed upon or to assume it. In the determination of this question the matter of price of the equipment was naturally involved and was discussed by Mr. Adams with various of the Bell officials, the last discussion being with Mr. Gherardi, of the American Telephone & Telegraph Co., and Mr. E. D. Nims, president of the Southwestern Bell Telephone Co., and the net result of their discussion was that Mr. Gherardi assured Mr. Adams that the price of this equipment would not exceed \$95 per line, and, on the basis of this price, it was then considered that the mechanical equipment could be economically installed in the combined Kansas City network and that, following the merger, it would be possible to procure a rate structure which would support the equipment cost on this basis.

Mr. Adams and the other officers of the company, therefore, agreed that the Kansas City Co. would assume the order and also that the order would be expanded into a full 10,000-line unit. The making up of the estimates and specifications for the additional equipment to expand the installation to a full unit was done by the general engineering staff of the Southwestern Bell Telephone Co., under Mr. W. O. Pennell, their chief engineer's direction, and the price used in setting up the estimate was on the basis of \$100 per line, which he apparently considered adequate and sufficient, and would also carry the increase in trunking provisions, that would necessarily follow the adaptation of the equipment for a merged system traffic, and to this estimate we agreed.

Installation work on this equipment has been, as you know, under way continuously since 1920 and is still uncompleted, and at the same time the Western Electric has been doing a large amount of other work in the various Kansas City offices, this work being the installation of additional manual equipment to provide for the merger and take care of growth and call indicator and associated equipment as an interlinking medium between the new mechanical and the several manual offices and practically from month to month since early in 1920 this company has paid a large number of Western Electric invoices which have been rendered from time to time "on account for equipment furnished and installation expense incurred," and covering the work in progress, the character of the invoices being such as to make it impossible to determine exactly what was specifically covered.

Despite repeated efforts on our part, we have been unable to obtain from the Western Electric Co. any definite information or proposals as to the actual cost of the equipment under installation until the receipt of an approximate estimate which they sent us under date of March 23, 1922, which is proposed to cover the original order of 5,890 lines and which totals \$1,133,830. Deducting from this estimate the sum of \$20,000 which we estimate is sufficient to cover the cost of the centralized information equipment, indicates that this original installation of 5,890 lines is costing at the rate of \$172 per line, instead of \$95 per line which Mr. Adams was given to understand the price would not exceed.

Furthermore, as the situation has worked out during the progress of the installation of this equipment it has developed that there will be no appreciable saving in operating expense by the introduction of this first mechanical unit as was originally contemplated, and which Mr. Pennell's original studies clearly showed. With no savings to be obtainable through the introduction of this equipment we find ourselves in an exceedingly difficult position in that it will be

⁵⁸ See exhibit 2096-G, pp. 231-233, inclusive.

out of the question to obtain a rate structure in Kansas City that will support a per-line cost anything near like your approximate estimate of \$172 per line indicates.

Also, the 3,700 lines which were ordered as an addition to bring this first order up to a complete 10,000-line unit figures in accordance with the Western Electric Co.'s approximate estimate furnished as under date of March 23, 1922, on the basis of \$203-plus per line, which proposed price simply makes more difficult an already difficult situation.

The total number of lines in this mechanical equipment now under installation is 9,500 lines, which, in accordance with the approximate estimates the Western Electric Co. was furnished, and referred to hereinbefore, figures on a per-line basis \$196, plus, which amount is more than 100 percent in excess of the per-line cost as we originally understood it would be.

The further fact that the installation of this mechanical equipment, which it was originally promised would be completed within 12 months, has dragged now into the twenty-fifth month with still no definiteness as to its completion, has occasioned a very considerable additional expense to this company. It has necessitated at least two important changes in our plans for merging the two systems and involved the maintenance of a much larger personnel than would have been required had the installation been completed within the original time promised. Furthermore, these delays have appreciably damaged our public situation and the consequent loss of public prestige, as you know, cannot be reckoned in monetary terms.

Therefore, the purpose of this letter is to recite the facts and to make a formal demand that the original equipment be furnished us at the agreed price of \$95 per line, and that credit be issued to this company to cover any billing in excess of this per-line cost; further, that the additional 3,700 lines covered by order 411484 be furnished on the same \$95 per line basis plus a fair additional cost to which we will mutually agree, and that may have been occasioned by the increased trunking provisions made necessary by the application of this mechanical equipment to the merged system.

This company had a definite agreement which contemplated a maximum price of \$95 per line for the original mechanical equipment and we must insist upon this agreement being adhered to. The officers of this company would have paid a cancelation charge on this equipment in accordance with the option given them except for the definite agreement made that the price would not exceed \$95 per line.

I would thank you for a prompt acknowledgment and would request you send us credit memorandum as soon as you verify facts which you will find to be as above stated. I am sending copies of this letter to Mr. Gherardi and Mr. Nims by reason of the direct reference made to them.

The following table summarizes briefly those few examples of the American Co.'s estimated cost to the associated companies of the panel-dial program; the amount subsequently paid by the operating companies for the equipment; Western's alleged total cost, exclusive of profit; and Western's alleged loss which was compensated for through apparently excessive profits on sales of other classes of operating equipment to Bell operating companies:

TABLE 46.—*Panel-dial equipment costs compared with estimates (expressed in dollars per equipped line)*¹

	Estimated cost supplied operating company	Actual cost to operating company	Western's alleged total cost exclusive of profit	Western's alleged loss
Omaha.....	\$79	\$141	\$179	\$38
Kansas City.....	95	180	230	50
Academy (New York City).....	79	171	240	69
Average of early installations ²		204	278	74

¹ See exhibit 2096-G, pp. 225, 229, and 231-233, inclusive.

² This is the average of all installations on which the initial shipment was made prior to Dec. 31, 1921, excepting for installations in New York City toll and installations made by the New England Telephone & Telegraph Co.

Appraisalment of the panel-dial program by the American Telephone & Telegraph Co. in 1921.—The difference between the 1918 estimated panel-dial prices and the reported costs of this type of equipment became so great that by 1921 a study was instituted by the American Telephone & Telegraph Co. for the purpose of determining the reason. For this purpose, a theoretical contract price was estimated for the Germantown, Philadelphia, office as it would have been if installed in 1918 and in 1921. This study indicated that Western's prices, in 1918, would have been \$91 per line for panel-dial equipment, and \$189 per line in 1921. Of this 107-percent increase, some 10 percent was attributed to cost of additional equipment and about 97 percent to price increases and inaccurate estimates for quantities of equipment needed, made by the Western Electric Co. Of the latter, approximately 67 percent reflected increases due to price changes and the remainder, approximately 30 percent of the original price estimate, was a measure of the equipment omitted from the 1918 office which was necessary to make it operative.⁶⁰

The American Co.'s engineers made a study, in 1921, on 12 jobs,⁶⁰ of the relative increase in the price charged associated companies for manual equipment and for dial equipment. This study indicated an increase in the prices charged for manual equipment of 36 percent and in panel equipment of 70 percent. Comparison by special investigation engineers of Western's manual equipment increase with the increases of Automatic Electric Co. prices⁶¹ indicated Western's increase on manual equipment to be consistent with Automatic Electric Co. price increase on step-by-step equipment. The net result of these and other studies available to the American Co. at that time was to indicate that the estimated price to associated companies of a fully operative panel-dial installation had increased far more than had the price of manual equipment. Prior to the end of 1921, when the results of the studies were available, Western had shipped equipment for at least 1 office in each of 13 metropolitan areas.⁶² Subsequent to this date, 5 additional metropolitan areas were equipped with panel-dial central-office equipment.⁶³ Therefore, in 13 out of 18 metropolitan areas in which panel-dial equipment was ultimately installed, the associated companies were committed to its use before the American Co.'s cost studies, analyzing critically the effect of their original commitment to the panel-dial program, had been completed and before the results of these studies were known. In addition, panel-dial equipment had been shipped to 8 of these original areas before Western Electric Co. engineers had definite knowledge of the complete equipment necessary to make a panel-dial system operative, as indicated by the fact shown by the 1921 studies that actual prices overran the estimates by about 30 percent because of the cost of equipment omitted from the estimates, which was necessary to make the installations operative.

Changes in Western's prices on panel dial equipment.—By 1922 the actual results of the American Co.'s panel dial program were the sub-

⁶⁰ The omission represented items either purposely or inadvertently omitted, such as routine test equipment; items unknown in 1918, such as the requirements of a factor of safety; specific development; cabling for official private-branch-exchange circuits; underestimates due to the use of an incorrect formula for figuring frames and racks; use of too low current drain; etc. See exhibit 2096-G, pp. 239-241.

⁶¹ See exhibit 2096-G, p. 241.

⁶² Ibid.

⁶³ Ibid., pp. 242 and 243. These cities include the following: Omaha, Kansas City, Boston, Philadelphia, Buffalo, Seattle, Providence, Chicago, Atlanta, Baltimore, Pittsburgh, New York, and Detroit.

⁶⁴ Ibid. The additional cities are: Cleveland, Cincinnati, St. Louis, Milwaukee, and San Francisco.

ject of intensive study by those responsible for institution of the program, and for its continuance. For some time cost studies had been in progress for the purpose of determining the highest price the associated companies could afford to pay for panel dial equipment. These studies indicated that Western's price for panel equipment could not average more than \$188 per line if the associated companies were not to incur losses under machine-switching operations as compared with manual operations. If panel prices were reduced to this level, Western estimated that it would incur a loss amounting to \$5,700,000.⁶⁴ At this time Western had a large investment in panel-equipment manufacturing facilities, millions had been spent in development work, and several panel offices had been, or were being, installed in the larger cities. In view of these facts, it was decided by the American Telephone & Telegraph Co. that Western's prices should be reduced to this level and that they be made retroactive over the installations already made. The reduction in Western's billing was made in the engineering and installation prices, which were limited to 16½ percent of the total material price. This method of billing was used for initial installations only. In January 1923 studies showed that Western Electric Co. estimated its loss up to that date at \$24,700,000⁶⁵ in place of the \$5,700,000 previously anticipated. At this time it was anticipated that if this basis of billing were continued through 1923 and 1924, a further loss of \$4,100,000 would be incurred by Western, making a total estimated loss of \$28,800,000. Up to the end of 1923, Western's panel equipment sales totaled \$90,185,000. Western Electric reported that the cost of installations was \$34,117,000 more than the amounts billed for installation, but that due to profits included in the sale price of materials, the net loss amounted to \$19,891,000, or 22 percent.⁶⁶ These losses do not include any part of the cost of development incurred prior to January 1, 1920, amounting to approximately \$11,000,000, which also was absorbed by Western.⁶⁷

Any losses of this nature must have been more than compensated for by profits on the sales of other types of telephone materials and equipment, because Western's telephone manufacturing business as a whole showed a net profit of from 6 to 12 percent on the average investment during this period, and its dividend payments to the American Co. were not interrupted. The amounts paid to Western by the associated companies for these other types of apparatus and equipment became a part of the plant investment of certain companies which made little or no use of the panel equipment. Commenting upon this situation, Mr. S. W. Murkland, Western Electric Co. general contract sales manager, said in part in a letter addressed to Mr. F. B. Gleason, telephone sales manager of the same company, in 1924:

In fairness to the associated companies purchasing manual and step-by-step equipment, they should no longer be required to pay part of the cost of panel offices which they do not buy. This practice, which is defensible in the early development stages of a new system, is no longer justifiable with an established product.⁶⁸

The subsequent efforts of Western and the American Telephone & Telegraph Co. were directed to cost reduction by simplification of the

⁶⁴ See exhibit 2096-G, p. 244.

⁶⁵ See exhibit 2096-G, p. 244.

⁶⁶ *Ibid.*

⁶⁷ *Ibid.*, p. 245.

⁶⁸ See exhibit 2096-G, p. 254.

equipment considered necessary for operation of the panel dial system and by increase in the volume of equipment manufactured. Cost data prepared by Bell Telephone Laboratories indicated that these efforts were highly successful in simplifying the original design. In approximately 6 years, from July 1921 to December 1927, simplification and standardization of panel dial equipment resulted in a 24-percent reduction, based on the Germantown office installation. Improvements in manufacture, likewise, were attained, and this, with a large volume of Western sales, permitted further substantial reductions in the installed price of the equipment. Pertinent material and commodity prices declined, especially in the early years of the period. The combined effect of these several causes of price reductions was to make the 1930 price to the associated companies of a typical panel central office considerably less than it had been in 1920 and 1921.⁶⁹ Following this 1930 low point, panel dial prices again were increased, by more than one-third, between 1930 and 1936. The 1936 prices paid by associated companies for panel equipment, not including manual equipment used in panel offices,⁷⁰ are substantially higher than those actually paid by the associated companies at the beginning of the period of its introduction from 1920 to 1922.⁷¹ The 1936 prices of complete panel central offices are, of course, substantially lower than the price charged during the introductory period from 1920 to 1922, because of reductions in the prices of manual apparatus used in panel dial offices, and as a result of improvements in engineering design of the panel offices, which require less equipment to handle a given amount of traffic.

Comparative costs of panel and step-by-step automatic central office equipment installations.—In 1925, after Western had sold more than 500,000 lines of panel equipment to the associated companies, the American Telephone & Telegraph Co. had studies made comparing prices of panel equipment with prices of step-by-step and rotary equipment.⁷²

For this purpose a committee of American Telephone & Telegraph Co. and Western Electric Co. engineers was assigned the task of studying the cost of manufacture of various types of automatic equipment and making recommendations as to whether the Western Electric Co.'s manufacture of panel equipment should be discontinued in favor of some other type. This committee went abroad to obtain costs on rotary equipment manufactured by Western's branch factory in Belgium, for the purpose of comparing such costs with those of panel equipment and step-by-step equipment purchased by Western from the Automatic Electric Co. of Chicago. As a part of its work the committee prepared estimates of costs of panel, rotary, and step-by-step types of automatic equipment for central offices of assumed sizes and calling rates. The results indicated that panel equipment was the least expensive for the largest multioffice areas with very high calling rates, whereas step-by-step equipment was less costly than the other types for large offices having moderate calling rates and for all medium and smaller central-office areas. Some of the working papers supporting these studies have apparently been destroyed so that a

⁶⁹ The 1920 and 1921 prices were those originally established before reductions by Western when it agreed to absorb part of the loss.

⁷⁰ The price of manual equipment forming a part of a complete panel dial central office has been reduced from its high level in 1920 to 1922.

⁷¹ See exhibit 2091, charts 77 and 78, pp. 244 and 246.

⁷² See exhibit 2096-Q, p. 265.

complete check by the special telephone investigation engineers was not possible. In the opinion of the special investigation engineers, certain of the assumptions underlying these studies were not in accordance with existing or possible future practices. For example:

(1) Certain comparisons were based on assumed calling rates (calls per subscriber's line in the busy hour) which were substantially higher than any calling rates ever experienced before or since, even in the largest cities' central offices, and far higher than any calling rate assumed in the actual design of a central office. The higher the calling rate the more favorable the conditions for the use of panel-dial equipment. These comparisons prove to be favorable to panel-type equipment.⁷³

(2) In the step-by-step equipment estimates for the larger central offices, the committee assumed the use of panel senders and specially designed panel translator frames,⁷⁴ and disregarded the step-by-step director switch which admittedly will perform all the functions of the panel sender and is much less expensive to manufacture.⁷⁵

(3) In pricing the equipment the committee used the Automatic Electric Co.'s 1924 sales prices to Western practically without modification. For purpose of comparison the committee did not use the then current Western Electric prices of panel equipment but reduced them in anticipation of price reductions up to the year 1930, at which time it was expected that Western would be producing 175,000 lines annually. Prices of panel equipment were lower by 1930, by about 23½ percent, but corresponding factors had also operated to reduce step-by-step equipment prices about 23½ percent by 1930.⁷⁶ By 1925 Western had been manufacturing panel-type equipment for 10 years, and had been on a standard volume production basis for 6 years. Volume of production had reached 140,000 lines in 1924. Had the committee allowed 23-percent reduction in step-by-step prices in its estimated costs for 1930 conditions, step-by-step equipment would have shown definite savings in cost as compared to the panel type for even the largest sizes of central offices in both multioffice and single-office areas.⁷⁷

To check the relative economy of panel dial as against step-by-step equipment, a comparative cost study was made by the special telephone investigation engineers of the Wisconsin Co.'s "Hilltop" office in Milwaukee, which may be classified as a "2-pull" ⁷⁸ light-traffic office.⁷⁹ They found that this associated company had paid \$641,567 for the Hilltop panel-dial equipment, including equipment in manual offices necessary for trunking between the dial and manual offices, while the Milwaukee exchange is operated partially on a manual basis. This study indicated that an equivalent step-by-step office, including necessary trunking facilities in manual offices, could have been obtained for \$509,483. The difference amounting to \$132,084 or 25.9 percent of the cost of step-by-step equipment for this office, represented an unnecessary increase in the investment in telephone plant which was included in the company's proofs in a pending rate case.⁸⁰ These results are consistent with those of the 1925 Bell Telephone Laboratories study mentioned above, which indicate that panel equipment, for similar central offices, would cost 23 percent more than step-by-step equipment. This is before any downward adjustment of step-by-step prices, and does not include dial trunking equipment in manual offices in the same area.

Hilltop office may be classified as a large residential office. The comparative costs of using panel and step-by-step equipment in a large

⁷³ See exhibit 2086-G, pp. 267-271.

⁷⁴ Bell Telephone Laboratories, Inc., case 20086-1.

⁷⁵ See exhibit 2086-G, p. 291.

⁷⁶ See American Telephone & Telegraph Co. study No. 1015, dated October 16, 1936, of panel and step-by-step equipment price indices.

⁷⁷ See exhibit 2086-G, table XXIX, p. 280.

⁷⁸ A 2-pull or 2-digit automatic office is one in which the first 2 letters of the prefix are used in dialing.

⁷⁹ This study is based upon a similar study introduced by Commission witnesses in the Wisconsin Telephone case, but is more accurate due to additional basic data available to the Federal Communications Commission engineers.

⁸⁰ Wisconsin Telephone Co. case, 2-U-35.

business office having a heavy calling rate in a 2-pull area are indicated by the result of a study prepared for the Broadway office in Milwaukee by the Wisconsin Telephone Co. engineers.⁸¹ This study shows that the ultimate annual carrying charges and operating expenses on the step-by-step office would amount to 94 percent of the corresponding charges on the equivalent panel-dial office.

It thus appears that the cost of panel equipment in 2-pull, light-traffic offices exceeds the cost of step-by-step equipment by approximately 25 percent, and that there is a definite saving in annual charges resulting from the use of step-by-step equipment in the heavy calling rate business offices in 2-pull areas.⁸² As of December 31, 1936, between 35 and 40 percent of the total Bell System investment of \$378,693,147 in panel-dial equipment was in 2-pull areas.

Maintenance expense of panel-type and step-by-step-type automatic central-office system.—The quarterly maintenance reports received by the American Co. from each associated company have provided material for a critical analysis by the special telephone investigation of the relative maintenance expense for panel and step-by-step central offices of corresponding sizes. The study as a whole demonstrates, according to the engineers, that for the sizes of offices studied, which include all existing panel-equipment installations except the largest downtown central offices in New York and Chicago, the maintenance costs for step-by-step-type equipment would be substantially lower than for panel-type equipment, the difference being somewhat over 13 percent.⁸³

Results of installation program of panel-dial and step-by-step central-office equipment.—As stated heretofore, the dial program of the American Telephone & Telegraph Co. contemplated the installation of panel-dial central-office equipment in all of the larger multioffice-exchange areas and the installation of step-by-step automatic equipment in the medium sized and smaller exchange areas. This objective is still far from attainment. Insofar as panel equipment is concerned, its supersession by the new cross-bar system has now been announced by the company. The 1938 annual report of the American Telephone & Telegraph Co. contains the following statement:

The new cross-bar system of machine switching * * * has been standardized for future use in the large city districts where "panel" switching has heretofore been the best available. Shipment of equipment to provide for 23,000 subscribers' lines was made in 1938, and equipment for 165,000 lines is scheduled for 1939.

That the further extension of the panel-equipment program into areas now served by manual central offices would have decreased rather than increased the over-all savings is the purport of a memorandum prepared by Bell Laboratories' engineers, dated October 2, 1934, for Mr. F. B. Jewett, president of the Laboratories, which is quoted below:⁸⁴

Considering, first, the problem of panel areas, we find that the history of dial-equipment installation has been somewhat as follows: The first offices to be provided with panel-dial equipment have generally been those in the central business districts of the larger cities where, due to the high-calling rate and the correspondingly large number of operators required on a manual basis, the savings

⁸¹ See exhibit 2096-G, table 33, p. 286-A.

⁸² This is confirmed by numerous other cost studies made by associated companies, some of which have been tabulated in table 33, p. 286-A, of exhibit 2096-G.

⁸³ See exhibit 2096-G, figures 5 to 8, inclusive, pp. 347-355.

⁸⁴ See exhibit 2096-G, p. 292.

to be realized with dial equipment were greatest. The installation of dial equipment tends to radiate from these centers toward the outlying districts of the larger cities with decreasing economies due to the lower calling rate and the result is that a stage may be reached in certain cases where further replacement of manual with dial would be uneconomical. In other words, as far as the dial program is concerned, we have been taking the cream and if we are to further nourish this program we must cut the cost of dial equipment. It is clear that the provision of a new system with a material margin of economy over panel permits the extension of dial service to more of the manual offices, and the cross-bar system holds promise of savings which will be sufficient largely, if not entirely, to eliminate manual offices from the dialing areas of large cities.

An appraisalment of the results of the panel-dial program, therefore, may be made at this time. The step-by-step automatic equipment program is still under way, but its results may also be appraised insofar as the program has progressed up to the present time.

Starting with 1925, and for each subsequent year through 1932, the American Telephone & Telegraph Co. has made studies of the savings resulting from the introduction of panel- and step-by-step-dial equipment by comparing the annual charges, including operating costs, of the dial offices with the estimated annual charges, including operating costs, of manual equipment which would have been required in the same locations to give the same service. In comparing the annual charges of dial and manual equipment, the fixed charges on the larger investment in dial equipment tend to be offset by the higher traffic costs, consisting principally of operators' wages, involved in operating the manual equipment.

The investments in panel and step-by-step equipment and the estimated cost of manual equipment used by the American Co. in making this study are shown in table 47, page 275.⁸⁵

According to the American Telephone & Telegraph Co. analyses of operating results of associated companies, the savings due to dial operation expressed as rates of return on the excess panel and step-by-step equipment investment over the estimated cost of corresponding manual equipment has increased gradually from 1925 through 1932, ranging from 0.5 percent in 1925 to 5.8 percent in 1931, and to 6.4 percent in 1932 for the panel equipment; and from 10.8 percent in 1925 to 18.7 percent in 1931 and 1932 for the step-by-step equipment. These data are summarized in table 48.

The American Telephone & Telegraph Co.'s claims of cost of money for Bell System financing are shown in column (4) of table 48. The American Co. estimates the "cost of money" by dividing disbursements for dividends and interest by the total of average capital stock, premiums on capital stock, surplus, and debt outstanding.⁸⁶ When the rates of return on added investment in automatic central-office equipment, shown in table 48, are compared with this alleged cost of obtaining the capital invested, it appears that the added investment required by the panel program has not yielded profits, in any year, equal to American Co.'s claimed "cost of money." On the other hand, it appears that the step-by-step program has resulted in profits in excess of those required to meet the "cost of money" as estimated by the American Co. in each and every year.

⁸⁵ See "Dial System Operation—Financial Results," contained in engineering binder No. 703 in the Federal Communications Commission files.

⁸⁶ See exhibit 1359, table 46, p. 141.

TABLE 47.—Investment in panel and step-by-step central office equipment and estimated cost of manual central-office equipment used by the American Co. in estimating the rate of return on excess investment in panel and step-by-step equipment

PANEL OFFICES

Year	Average number of lines	Panel-equipment investment ¹		Estimated cost of manual central-office equipment	
		Total (000 omitted)	Per line	Total (000 omitted)	Per line
1924	230,000	\$66,900	\$291	\$23,300	\$101
1925	440,000	115,700	263	40,300	92
1926	585,000	145,100	248	51,600	88
1927	680,000	161,500	237	59,200	87
1928	513,000	150,100	222	69,600	86
1929	1,040,000	206,200	198	87,200	84
1930	1,335,000	240,300	180	110,800	83
1931	1,660,000	277,800	167	137,800	83
1932	2,000,000	318,500	159	165,000	82

STEP-BY-STEP OFFICES

Year	Average number of lines	Step-by-step equipment investment ¹		Estimated cost of manual central-office equipment	
		Tot. (000 omitted)	Per line	Tot. (000 omitted)	Per line
1924	285,000	\$33,200	\$116	\$13,000	\$46
1925	380,000	48,100	127	19,700	52
1926	525,000	66,200	126	28,400	54
1927	715,000	84,200	118	38,900	54
1928	860,000	99,300	115	46,900	55
1929	1,200,000	118,200	98	62,300	52
1930	1,550,000	140,900	91	81,600	53
1931	1,870,000	164,400	88	99,200	53
1932	2,150,000	182,500	85	115,000	53

¹ Includes price of equipment required in manual offices for the completion of calls incoming from dial central offices.

NOTE.—The per-line figures were not included in the American Co.'s study, but have been calculated by the special investigation engineers.

Source: American Telephone & Telegraph Co. reports entitled "Dial System Operation—Financial Results," copies contained in engineering binder No. 703 in the Federal Communications Commission files.

TABLE 48.—Summary of American Co. estimates of percent return on the excess investment resulting from the installation of automatic instead of manual central-office equipment in the Bell System, and of American Telephone & Telegraph Co.'s estimate of "cost of money"

Year	Rate of return on excess investment		American Telephone & Telegraph Co. estimated "cost of money"
	Panel type	Step-by-step type	
(1)	(2)	(3)	(4)
	Percent	Percent	
1925	0.46	10.80	6.93
1926	2.40	10.80	6.83
1927	3.20	15.70	6.96
1928	1.40	10.20	6.55
1929	3.40	14.30	6.53
1930	4.60	17.70	6.25
1931	5.76	18.70	6.42
1932	6.35	18.70	6.50

Source: Columns (2) and (3), American Telephone & Telegraph Co., operation and engineering department reports entitled "Dial System Operation—Financial Results," copies contained in engineering binder No. 703 in the Federal Communications Commission files. Column (4), exhibit 1359, table 46, p. 141.

■ The relative magnitudes of the annual charges for panel equipment and for the equivalent manual equipment depend in part upon the number of calls handled and upon the manual operators' loads, which measure the calls handled per operator. Conditions in this respect changed considerably during the years following 1932. For instance, in 1935 and 1936, although the total number of calls handled by the Bell System was about the same as in 1932, the manual operator's average load increased about 10 percent in the later period. Special investigation engineers estimate that the effect of this increase in operators' loads would be to reduce the rate of return on the added investment for panel operation to about 3.2 percent. By 1935, the alleged cost of money, according to the American Telephone & Telegraph Co. basis of calculation, had risen to approximately 6.8 percent.

Crossbar automatic system.—Beginning about 1913 the American Telephone & Telegraph Co. undertook the development of a switch operating on the coordinate principle, and in 1915 obtained a patent on the so-called crossbar switch. This switch has no vertical or rotary movement but operates through angular displacement, by electromagnetic means, of vertical and horizontal bars arranged in coordinate fashion. This switch was considered for use as a line finder for the panel system in 1919, but was dropped in favor of the panel selector. Subsequently the Swedish Telephone Administration improved the design of this switch and developed an automatic system which was employed in that country. The next appearance of the coordinate principle in the Bell System plant consisted in its application in the "decoder," an improved feature of the panel system introduced in 1929. About 1930 the Bell System engineers recognized the possibilities of combining the more modern crossbar switch with the fundamentals of operating circuits on the coordinate principle to produce an improved dial-telephone system, which may be classified as a system employing relays. This system has recently been used in trial installations, and Bell System engineers expect it to show considerable advantages over the panel system, both as to original cost and as to maintenance expense. The crossbar system has now become a provisional standard of the Bell System, for application particularly in exchange areas which have been partially converted to panel-dial operation.

Control and Standardization of Bell System Operating Practices.

The centralized engineering work of the American Telephone & Telegraph Co. general departments and of the Bell Telephone Laboratories covers management and operation of the associated companies as well as the determination of types of plant and equipment to be used in the Bell System properties. Control and standardization of accounting, commercial, maintenance, and traffic operating methods and practices throughout the Bell System are made effective by the American Co. through its services, supplied under the terms of the license contract, in the form of accounting, commercial, traffic, and engineering circulars, letters, and instructions issued to all of the associated companies and through personal instruction of the operating personnel. Methods and practices are standardized for the guidance of the operating companies in the maintenance of their plants; in the handling and disposition of the central-office operating forces; in the commercial department's relations with the public, in billing and collecting practices; in forecasts of population growth and

future telephone requirements, on which plans for plant additions or extensions are predicated; and in the detailed accounting records maintained by the plant and general accounting departments.

The question of reasonable operating expenses has come under the scrutiny of State commissions and courts in many telephone rate cases, and it has been pointed out that the determination of reasonable operating expenses is of equal importance with the fixing of a reasonable value of the property as a rate base.

The subject of Bell System operating expenses in its entirety was too broad to be covered by this investigation, beyond the point of establishing the fact of American Telephone & Telegraph Co. control over all phases of associated company operations. Certain aspects of telephone operating practices were, however, studied to a limited extent. These included: (1) Forecasts of future plant requirements as applied particularly to the long lines department of the American Telephone & Telegraph Co.; and (2) traffic expenses and manual operators' loads.

Commercial forecasts of telephone-plant requirements.—Forecasting of Bell System requirements, carried out by the commercial departments of the associated companies and of long lines in accordance with American Co. standards and methods, provides the basis for annual provisional estimates made jointly by the plant, commercial, and traffic departments.⁸⁷ The estimated amount of plant required by the Bell System companies depends principally upon the number and location of subscribers' stations and the number of telephone messages to be transmitted, which in turn depend upon estimated general business conditions.

During the early years of the depression, 1930 and 1931, the effect of continued belief in prompt recovery, which was shared by the American Co. management with the majority of business leaders in the United States at that time, was reflected in the construction activities of the Bell System long lines' plant.⁸⁸ The continuation of this optimistic view, for at least a year following the beginning of the depression, resulted in continued optimistic forecasts of the volume of toll business. To illustrate: In the case of long lines department estimates made late in 1930 at a time when the actual results for the major part of a year were available, there was forecast a 50-percent increase in toll messages during the period 1931-33, despite the fact that actual business for 1930 showed practically no increase over the 1929 business.⁸⁹ The actual number of messages handled in 1933 was less than one-half that predicted in the forecast of that year's business prepared in 1930.

Long lines plant construction estimates necessarily were predicated upon the American Co.'s forecasts of general business conditions, and upon the resultant forecasts of the volume of long-distance business.

⁸⁷ Up to 1930 these provisional estimates covered a period of 5 years; in 1930 this 5-year forecast was reduced to a period of 3 years.

⁸⁸ Late in November 1930, about a year after the beginning of the depression, President Gifford made the following statement in an address delivered at Salem, Mass., to the Essex Institute, in commemoration of Alexander Graham Bell. This address reported in the New York Times of November 25, 1930, under the title "Gifford Predicts Early Prosperity," was in part as follows: "But just as sure as I am standing here this depression will pass, and we will again find ourselves in the midst of reasonable prosperity, and reasonable prosperity of the United States means a higher standard of living, and greater material prosperity than any country in the world has ever known before. . . . The new idea of industry as I see it is that there is enough to go around if we can only work out the intricate and difficult problem of having it go around right, and work out the difficult problem of seeing that our prosperity is prosperity for all, just as our education is education for all and our politics are democratic."

⁸⁹ See exhibit 580, p. 12.

Long lines gross construction expenditures in 1928 were greater than for any year up to that time in the history of the Bell System, and amounted to over \$50,000,000. In 1929 construction expenditures almost doubled, increasing to more than \$93,000,000. In 1930 the trend continued beyond this level, exceeding \$101,000,000. In 1931 construction decreased to about \$42,000,000, more than \$4,000,000 higher than it had been for any year prior to 1928. The gross construction expenditures in 1932 amounted to approximately \$13,000,000, and averaged about \$6,500,000 annually during the period 1933 to 1935, inclusive. A portion of these construction expenditures, incurred after the effect of the depression had become evident, was, of course, made on projects authorized prior to that time.

Long lines department average investment in plant in service was almost doubled during the period 1928-33.⁹⁰ By 1933, however, the number of toll messages amounted to approximately 70 percent of those handled at the high point reached in 1930. The plant thus constructed, much of which is still remaining idle, has not only increased capital investment, but, in addition, developments and improvements in the telephone art, and changes and shifts in the growth of population and in the demands for telephone service have already so altered the technical and geographical requirements for service that large quantities of presently existing not used and useful telephone plant cannot, in the opinion of special investigation engineers, in the future again be used to advantage.⁹¹

An indication of the existence of idle plant in the long lines department in 1934, 1935, and 1936 is afforded by statistics of the numbers of units of various types of equipment installed, as compared with the units in current use. Of 22,947 toll-switchboard positions in the plant in January 1934, over 57 percent were idle. Of 22,500 toll-switchboard positions in the plant in January 1936, over 52 percent were idle. Of 3,600,000 miles of long lines toll circuits in the plant in December 1935, 45 percent were idle.⁹²

The special investigation engineers have found that the long lines department in a number of cases has failed to remove or write off plant no longer used or useful from its fixed-capital accounts except where maintenance requirements and the demands of public authorities have made it expedient to dismantle the lines and remove the equipment;⁹³ in those cases the result has been to continue depreciation accruals on plant which will not again form part of the company's operating requirements.

Traffic operating methods and operators' loads.—During the decade beginning in 1920, because of the deterioration of service during the war period and rapidly increasing demands for service, the American Co. devoted its efforts largely to improving the quality of telephone service and to handling the increased quantities rather than placing emphasis upon reductions in cost.

⁹⁰ The average investment in long lines plant was \$223,582,024 during 1928; \$409,347,333 during 1931; \$435,951,820 for 1933; and \$433,340,470 during 1935. See exhibit 135, table 1, p. 14, for complete recent history.

⁹¹ See exhibit 580.

⁹² "Idle plant" includes that portion of plant not presently in use which the company may consider necessary in order to meet anticipated increased future requirements.

⁹³ Large investments in underground conduit and cable may be rendered permanently not used and useful by the advent of carrier transmission. Large investments in manual toll switchboards may either be rendered permanently not used and useful by the substitution of later types of automatic and semi-mechanical toll switchboards, or may delay the introduction of those more efficient and economical types of equipment and operating methods.

Much of the possible economy in the operation of manual switchboards⁹⁴ depends upon the training and supervision of the operators and upon the control of traffic forces through establishment of correct standard loads which permit the operators to work at their highest efficiency. The present Bell System methods of measuring traffic efficiency were inaugurated in 1911 for application to the so-called No. 1 manual switchboard. At that time a standard load which was intended to represent the amount of work an average fully trained operator would be called upon to do in an hour was established as 230 traffic-work units.

Since telephone service tends to rise to a sharp maximum at the "busy hour," and supervisory traffic employees are required in the central office, this standardization of operators' loads at 230 units in the busy hour corresponds to an average load per day per employee of about 132 units. Until the reduction in business volume (and net profits) following 1929, it was the general opinion of the Bell System traffic engineers that no sustained improvement in these loads could be made without an effect upon the quality of service; that is, without increasing the time of answer or the percentage of error in connections. It is significant, as a commentary upon the value of rigid standardization of operating methods, that this opinion was so well established that any substantial deviations from these standard loads in the case of individual central offices were looked upon with suspicion. American Co. records show that when traffic loads fell below standard an immediate attempt was made to increase the load by reducing the number of operators. When, on the other hand, instances arose where certain exchanges showed operating loads substantially higher than the standard, the conclusion was reached immediately that the reported figures must be in error or the quality of service must have suffered, and the field forces were required to make careful check of their reported data and results.⁹⁵

When the business depression began to make itself felt early in 1930, the sharp decrease in revenue and net profit of the operating companies focused the American Co.'s attention upon the problem of effecting reductions in operating expenses to meet falling revenues, and a serious effort was made to reduce its operating expenses.⁹⁶ The continuance of the previously existing quality of telephone service was not endangered, but where economies could be made without a sacrifice of service, pressure was brought to bear upon the associated companies to put into effect methods of reducing operating expenses.

Over-all traffic loads were increased during the years 1933-35 to about 22 percent in excess of the loads carried during the 1922-29 period. About 12 percent of this increase was due to a general increase in operating efficiency and the remaining 10 percent was the result of higher experience of operators during the latter period. The increase in traffic efficiency may be seen by a comparison of the average daily traffic load over the period 1922-29, as compared with the period of 1933-35.⁹⁷ For the period of 8 years of improving business volume the average load was 140 traffic units, including 8 units for information and intercepting services. For the 3-year period of re-

⁹⁴ As distinguished from dial mechanically operated central-office equipment.

⁹⁵ See exhibit 2096-G, pp. 303-307.

⁹⁶ Exhibit 2096-G, pp. 308-311, inclusive.

⁹⁷ See exhibit 2096-G, summary, p. xix, and table xxxv, p. 319.

duced business volume the average daily traffic load was increased to 172 units.⁹⁸

The American Telephone & Telegraph Co. has suggested a number of reasons for the marked success of its concentrated effort to increase operating efficiency and decrease costs during this period.⁹⁹ The company points out that beginning in 1930 several conditions combined to bring about an increased smoothness of operation, the effect of which is not adequately evaluated in any of the load-measuring devices. There was the cumulative effect of the use of improved methods and practices and of improved equipment arrangements adopted in the years just before the depression. Improved practices became possible because of the improved experience of the operating forces. There were equipment margins, that is, equipment in excess of that required to give the service. This reduced delays encountered in the handling of calls. There was a decrease in equipment troubles which resulted from improvements in the maintenance of plant and a lessening of other operating difficulties experienced by the traffic forces. There was improvement in the technique of management which had been brought about by the better selection and training of men; by the cumulative effect of the use of more complete routines and other aids to management, which became available only in the late 20's; by increased experience of the younger executives and managers; and by the general conditions of unemployment which removed many of the problems of obtaining and training operators and made possible the concentrating of management effort on expense and service.

As a result of these and possibly other favorable conditions, the incentive expressed by the American Co. for increased efficiency and economy in operating produced immediate and remarkable results. These results were considered phenomenal by operating men of long experience in the Bell System, as indicated by letters and reports from the field, of which the following excerpt from the letter of General Traffic Manager C. A. Scattergood, of the Northwestern Bell Telephone Co., to the American Co.'s traffic manager, M. B. French, dated February 13, 1932, is an example:

The level of operating loads reached in 1931 has exceeded so substantially past conceptions of attainable load levels that the question naturally arises as to how far loads can be raised without overworking the force or degrading the service, or both. As loads were raised in Minnesota during 1931, service results grew correspondingly better. Careful and constant scrutiny and checking from various angles has failed thus far to disclose any evidence of strain on the force or the existence of any feeling that excessive demands were being made on the force. The increase in loads in this area, 1931 over 1930, was realized not so much through increased board loads as through higher supervisory and clerical loads. While the board load was increased 7 percent, the supervisory load was increased 22 percent, and the clerical load was increased 12 percent.

About the middle of last year we made an investigation in Minneapolis to determine how far we might safely go in raising loads without causing strain or lowering the quality of the service. The conclusions drawn from this study were that basic board loads could be exceeded by 2 to 5 percent, and with proper provision of supervisory and clerical force, the over-all load approximated 165. This appears to be the proper manual-load objective for our multioffice cities, Minneapolis and Duluth.

Mr. Scattergood's statement in this letter of February 13, 1932, that an over-all load of approximately 165 units appeared to be the proper manual-load objective, although it seemed to him at the time "to

⁹⁸ Ibid., p. 318.

⁹⁹ American Telephone & Telegraph Co. comments on exhibit 2096-G, vol. 37, pp. 66 and 67.

exceed substantially past conceptions of attainable load levels" nevertheless soon proved too conservative, as is evidenced by his letter of September 29, 1933, to Mr. French, wherein he stated:

In the provisional estimate for the last 4 months of the year we have shown a load of 176 for this area whereas our actual average for the preceding 4 months was 176.5. We were in general about on a level of 178. It should be possible, unless radical changes occur, to maintain the level somewhere near the reduced figure and to increase it slightly if no more disturbing changes are encountered for a while.

There do not appear to be, generally speaking, any situations throughout this area where service conditions are such as to necessitate a reduction in the load. It has been our policy to attempt to raise the loads only where it could be done without sacrifice of a satisfactory grade of service.

Summary.

The centralization of research and engineering under direct control of the American Telephone & Telegraph Co. and the complete standardization of Bell System plant, equipment, and operating methods and practices are given credit by the American Telephone & Telegraph Co. for a large part of the advances made in telephony since 1907, and in large measure for this country's alleged world leadership in quality and reasonable cost of telephone service. At various times the Bell System companies have made showings that research and engineering work of the American Telephone & Telegraph Co. have produced large reductions in the cost and made possible extension and improvement of the telephone service, which would not have been possible with previously available methods and types of equipment.

The element of judgment involved in the selection of the device or method of standardization in the Bell System, as well as the time when such device or method shall become the standard, is very important from the standpoint of all interested persons, the subscribers, employees, and stockholders. The evidence available establishes quite clearly that certain practices and devices standardized in the Bell System have resulted in substantial reductions in cost for a comparable quantity of service of an improved quality. On the other hand, evidence available appears to indicate that certain decisions of the management may not have resulted in the greatest possible reductions in cost or improvement in service.

It is almost impossible to evaluate accurately the results of the adoption or of the failure to adopt a particular device or method. Explanations of such conditions may, in the opinion of the investigation engineers, lie in considerations of management relative to the loss incident to the displacement of older by newer forms of equipment, patent situations with respect to productions of others, reluctance to purchase materials and equipment outside the Bell System, reluctance to direct Western to discontinue manufacture of types of equipment on which large expenditures for development and tools had been made.

There is evidence, in the opinion of investigation engineers, that the management of the American Co. has been responsible for certain decisions regarding standardization of equipment and methods which may have affected adversely the cost and convenience of telephone service, among which are the following:

1. Certain improvements known to the company have not been made available to the public for considerable periods of time.
2. Certain improvements in the art developed outside the Bell System have not been adopted until many years after they were

available on the open market, with resulting failure to realize possible economies and improvements in service in the Bell System.

3. Standardization of certain types of equipment, which have not resulted in reductions in cost or improvement in service commensurate with the additional investment involved, and continued investment in such equipment after the condition became apparent.

4. Failure to realize maximum efficiencies in certain standardized operating methods until the incentive for economy became dominant during depression years.

The corporate structure of the Bell System, in which the American Co. is the owner of the operating companies and also of the manufacturer and supplier of telephone equipment for the Bell System, may have an influence on the decisions of the American Co. management with respect to standardization of equipment to be manufactured by Western Electric Co. It appears that this situation may call for close scrutiny by regulatory bodies of standardization practices involving expenditures of large sums of money for new types of equipment to be substituted for existing telephone plant.

CHAPTER 10

WESTERN ELECTRIC CO. COSTS AND PRICES

This chapter is concerned with the costs and prices of telephone apparatus and equipment manufactured and sold by the Western Electric Co., Inc., and their significance in relation to the cost of furnishing telephone service and the level of telephone rates.

The Western Electric Co., Inc. (hereinafter referred to as Western), has been characterized as the manufacturing and supply department of the Nation-wide Bell System. Both Western and the Associated Bell operating companies are under the common control of the American Co. Under the provisions of the standard supply contract with the Associated Bell operating companies, Western provides substantially all the telephone apparatus, equipment, and supplies purchased by the Bell System. By virtue of its position in the Bell System, Western has exclusive access to the large associated company market and its production as a manufacturer is controlled principally by the needs of the operating companies. The size of this market is indicated by the fact that the gross book cost of investment of the Bell System companies in telephone plant and equipment is over \$4,250,000,000,¹ which amounts to approximately 90 percent of the total gross book cost of telephone plant and equipment in the United States. Western's sales of telephone apparatus, equipment, and supplies to Bell customers for the 11-year period 1926-36, inclusive, amounted to more than \$2,180,000,000.² Western's total sales for the same period were approximately \$2,337,000,000.³

A large part of the huge investment of the Associated Bell operating companies reflects the cost of telephone apparatus, equipment, and supplies, including installation services furnished to them by Western. Consequently, a large part of the cost of telephone service depends upon Western's prices. These prices are considered by the companies to be the basic factors in establishing or determining the fair value of telephone property in rate proceedings. Original cost, they contend, depends in a large measure upon the prices paid to Western for telephone apparatus and equipment at the time of purchase and reproduction cost upon prices in effect at the time of the inquiry.

Rates for telephone service are under the jurisdiction of various State and municipal bodies and one Federal regulatory body. The rate for exchange service in a single city or community may be the only matter in issue in a rate proceeding or a confiscation case (*Smith v. Illinois Bell Telephone Co.*, 282 U. S. 133). The composition of telephone plant varies substantially between different communities and different States. If the investment in plant and the estimated cost of reproduction as of any date are to be reasonable as to all classes of subscribers in all sections of the country over all periods,

¹ Annual Report of the American Telephone & Telegraph Co., 1935, p. 14.

² Exhibit 2000-C, schedule 85, and table 19, p. 59, *supra*.

³ Exhibit 2000-B, table 64, p. 250, and table 19, p. 59, *supra*.

it is axiomatic that the prices charged by Western for the various types of plant and equipment must bear a reasonable relation to costs computed in accordance with sound principles of cost allocation.

Manufacturing Costs as Shown by Western's Records and Cost Accounting System.

The following discussion is based upon an examination, by the investigation staff, of Western's published accounting instructions. The costs of individual products computed by Western are called "standard shop costs," "standard complete costs," and "current complete costs." Upon request of the commercial department, "current shop costs" are also computed. The standard costs, which are approximations of actual costs based upon estimates of material, labor, and the portion of overhead expenditures to be allocated to each product, are intended to represent costs that would obtain in a year of normal production. The current costs are standard costs adjusted for the differences between standard cost estimates and total current expenditures for material, labor, and overhead. The standard shop costs are employed in Western's accounting system as the basis for (1) computing the value of transfers of manufactured products from the manufacturing department to the merchandise and other departments; (2) computing the variations between standard cost estimates and current expenditures; (3) computing "basic gross profits," which are the difference between selling price and standard shop costs; (4) costing inventories of manufactured products; (5) determination of prices to customers, and for other purposes.

The standard complete costs and the current complete costs are computed for statistical, pricing, and other purposes when required by the commercial and general accounting departments.

Description of Western's Method of Computing Costs.

As stated above, Western computes two general kinds of cost figures, viz, standard costs and current costs. The standard costs constitute the bases for the computation of Western's current costs. In the paragraphs immediately following, the successive steps taken in computing such costs are described:

1. *Standard shop costs.*—Inasmuch as standard shop costs apply to specific types of products manufactured, the first step is to determine the design of the particular product for which a standard cost is to be computed. This may be the design in current production, or it may be a modified design which is expected to put into effect during the period when the standard shop cost will apply. Associated with this selection of design is the determination of the methods of manufacture which are to be followed.

Upon determination of the design and methods of manufacture, Western estimates the following cost elements or cost factors: (1) direct labor; (2) indirect labor (labor increment); (3) expense loading (labor load); and (4) material. Direct labor consists of two main elements, classified as basic labor cost, and nonbasic labor cost. The former includes all wages paid for manufacturing operations by machine or hand which are necessary to change the form, advance the stage of manufacture, convert, or repair the particular product, including inspection directly applied to either processed or finished material to insure that the product meets the specific requirements. Nonbasic labor cost includes payments for set-ups,

limited piece rates, machine or tool trouble, tool try-outs, repair of defectives, etc., including wages paid for border-line occupations, such as crane operators, counters, dispatchers, porters, truckers, and others permanently assigned to production centers. Nonbasic labor cost is included in direct labor through the application of standard percentages to basic labor. "Basic" and "nonbasic" labor together comprise "direct labor."

Western's indirect labor cost or "labor increment" is determined by the application of "labor increment" rates to basic labor. These "labor increment" rates provide for the inclusion in standard cost of certain wages that are paid to direct labor employees and other related costs incurred which are considered as applying generally to broad classes of products. The wages and other related costs thus recovered through the application of the labor increment rate include vacation pay and other pay allowed for absences, overtime allowances, minimum-earnings allowances, pay allowed for time spent on employee representation, excess of payments over piece rates, benefit and termination allowances, provisions for nonemployment insurance and pension accruals. The sum of "direct labor" and "indirect labor" constitute the "labor" element of "standard shop" and "standard complete" costs.

Western's practice of including "nonbasic labor" and "labor increment" in "labor" rather than in overhead expense is contrary to customary practice throughout the manufacturing industry. This feature of Western's cost accounting obviously tends to overstate actual direct labor with an equivalent understatement of overhead charges as compared with those of manufacturers who follow other practices.

The expense loading is computed at a rate established for the purpose of prorating to the product a proportionate share of the normal manufacturing expenses estimated on a basis of total normal production and normal efficiency. The expense loading is determined by dividing the total estimated manufacturing overhead expense by total normal labor hours, producing an estimated amount of overhead expenses per labor hour. The manufacturing expenses to be recovered through the expense loading include depreciation of plant, taxes, all other works overhead, manufacturing department headquarters expense, and engineer of manufacturing expense. The estimated normal labor hours used in computing the expense loading rates are determined as follows: Estimates are made of maximum-capacity hours based upon a maximum capacity of machine and bench positions available for use, predicated upon operation of the plant upon a single-shift basis for a standard week. In instances where the established shop practice is to operate on other than a single-shift basis, maximum capacity labor hours are based upon the method of operation. Estimated normal labor hours are then determined by reducing maximum-capacity hours for (a) the time which the machine and bench positions are not operated due to such causes as renewing supply of material, machine breakdowns, machine adjustments, vacations, holidays, normal absence, repair of tools and equipment, and other interruptions and delays which prevent full-time operation; and (b) unbalanced capacity of equipment as indicated by the smallest machine capacity for output of parts or by the fewest available assembly machine or bench positions producing

bottleneck conditions. Total normal production thus determined is then reconciled with the sales department's normal based upon customer's requirements.

The material-cost estimates include all materials which enter into the product, or which contribute to the fabrication of the product, at standard cost less normal scrap at standard scrap cost. In certain cases raw materials, because of the small quantity used per job or the nature of the material, are considered expense supplies and are recovered through the standard expense loading. Standard material costs are estimated at levels representative of the average cost anticipated for the period during which the standard costs are to be in effect.

Additional cost elements are included in standard shop costs by increasing the factors described above through the application of standard percentages. These standard percentages are intended to cover (1) excess of quantity of material used over the quantity specified in the manufacturing lay-out or design, calculated as a percentage of the material cost; (2) loss from defective work and errors, not previously considered, changes in design, and other merchandise losses; and (3) preliminary packing. These last two are calculated as a percentage of all preceding costs.

In considering Western's standard shop costs, the possibility of divergence from actual cost is apparent from the number of factors involved and the method of estimating and applying the various factors and percentages. Approximate current shop costs are estimated for the use of the commercial department by adjusting standard shop costs for (1) a pro rata share of the total "operating surplus" (the difference between standard cost estimates and total expenditures for labor and manufacturing overhead) for the respective class of product⁴ to which the surplus is considered applicable; (2) a pro rata share of the "current underrun" (or overrun) on materials (the difference between standard and actual costs of purchases) considered applicable to the particular class of product; and (3) merchandise inventory revaluations and reserves. The determination of standard shop costs constitutes the first step in the computation of current complete costs.

2. *Standard complete costs.*—The second or intermediate step in the computation of Western's current complete costs consists of the addition to standard shop cost of (1) standard distribution expense; (2) standard development expense; and (3) royalties paid. Distribution expense covers merchandising, distributing, and general expenses. Development expense covers the cost of experimental work, research, current development, engineering, and patent activities. Royalties paid are to be included as a specific item of cost in establishing selling prices.

Standard distribution expense is generally expressed as a percentage of standard shop costs, but in a few instances it is stated as a percentage of some other base. The standard distribution expense rates vary for the different main divisions⁵ of Western's products. Currently (1936) they vary from a low of 4.5 percent for lead-covered cable to a high of 23.5 percent for AH apparatus (apparatus returned by

⁴ The classes are apparatus and equipment, lead-covered cable, and supplies.

⁵ Classes for distribution loadings are lead-covered cable, drop and other rubber-covered wire, installation and equipment specifications, AH apparatus, other apparatus and equipment, and supplies.

customers and repaired or converted by Western for reuse). In both of these instances the rate is applied to standard shop cost.

Standard development expense is applied in the same manner as standard distribution expense, and in all instances, the rates are expressed as a percentage of standard shop cost. Current rates (1936) for standard development expense, fixed for the different main classes of the equipment and apparatus,⁴ vary from a low of 1.5 percent for cable and wire, and AH apparatus, to a high of 17.5 percent for "other apparatus and equipment."

3. *Current complete costs.*—The last step in Western's computation of costs of individual products is the determination of current complete costs. These costs are computed by applying what Western designates as "over-all variations" to the factors comprising standard complete costs. Over-all variation percentages are computed for broad classes of products, and these percentages are employed for the purpose of allocating to the numerous specific products, within each general class, a pro rata share of the differences between standard cost and total current expenditures. The over-all variations thus allocated to specific products include (1) a pro rata share of the "operating department's surplus" considered applicable to the particular product class; (2) a pro rata share of the "distribution expense surplus" considered applicable to the particular product class, and (3) a pro rata share of the "development expense surplus" considered applicable to the particular product class. The operating department's surplus represents the difference between standard costs and total current expenditures for material, labor, and overhead, including inventory revaluations and reserves. The distribution expense surplus is the difference between standard distribution expense and total current merchandising and general expenses. The development expense surplus is the difference between standard development expense and total current expenditures for development.

Cost charts, Nos. 10 and 11, pages 289 and 290, illustrate the manner in which the over-all variations between standard costs and current expenditures for material, labor, and manufacturing overhead (labor load), and between standard and current distribution and development expenses are included in Western's current complete costs of specific products. These over-all variations as stated above are applied by the use of over-all ratios or percentages computed for broad classes of products. Western reported two methods of applying the standard shop cost variations. One method applies total variations for material, labor, and manufacturing overhead to the standard shop cost as a base; the other applies each over-all variation to its corresponding element of cost as a base. Under both of these methods of computing current complete costs the variation factors applied to the cost of a particular product are based on the over-all manufacturing results of Western's production of an entire class of product, without relation to the results which may have been obtained for a particular product included in the class.

At the request of the Commission, Western furnished total over-all variations for three principal classes of products—namely, substation apparatus, apparatus and equipment other than substation, and lead-covered cable—sold to Bell operating companies. This information

⁴ Classes for development loadings are cables and wires, station apparatus, sound-picture equipment other than vacuum tubes, outside plant and protection equipment, telephone booths, AH apparatus, and other apparatus and equipment.

was used as the basis for the computation of the over-all variation percentages for the years 1929 to 1936, inclusive, shown in table 49. These variation ratios measure the differences between standard complete costs and total estimated current complete costs, which are allocated to particular products by the application of over-all percentages, computed for each general class. Examination of this table shows wide variations in these composite percentages, most of which represent current costs in excess of the standards with which they are compared. To illustrate, the range for substation apparatus is from 70.1 percent in 1933 to 8.0 percent in 1929. Similarly, the range for other apparatus and equipment is from 97.6 percent in 1933 to 6.3 percent in 1929. The composite percentages for lead-covered cable are quite different. For 2 years the percentages show estimated current complete costs to have been less than standard complete cost. The range for the period is from 29.4 percent in 1934 to a negative 5.8 percent in 1931. The wide variations during the years 1930 to 1935, inclusive, may be due largely to the fact that Western did not revise its standard costs during that period. If standard costs had been revised to reflect, even approximately, current operating results, the variations would of course, have been much smaller.

TABLE 49.—Composite over-all variations from standard complete cost for 3 main classes of Western's products, by years, for the period 1929-36, inclusive, on Bell business ¹

Year	Substation apparatus	Other apparatus and equipment	Lead-covered cable	Year	Substation apparatus	Other apparatus and equipment	Lead-covered cable
	Percent	Percent	Percent		Percent	Percent	Percent
1929.....	8.0	6.3	0.7	1933.....	70.1	97.6	10.2
1930.....	12.7	11.0	(4.6)	1934.....	47.5	80.2	29.4
1931.....	9.1	12.9	(5.8)	1935.....	26.5	50.3	4.8
1932.....	37.7	47.5	19.7	1936 ²	22.7	40.5	20.8

¹ Computed from data in exhibit 1952, letters dated May 26, 1936, and Nov. 20, 1936, from R. H. Gregory and M. L. Lombard to the Federal Communications Commission, and Western's accounting circulars.

² From Comment No. 24, submitted to Federal Communications Commission by American Telephone & Telegraph Co. on Commission exhibit 1952, p. 37.

As previously stated, the composite variation percentages shown in table 49 are the results obtained by applying total net variations between standard and actual cost estimates to standard complete costs. The component variations contained in each composite percentage are partly cumulative and partly compensating. For example, in the case of substation apparatus ⁷ for the year 1933 the labor and expense loading variation was a deficit amounting to 77.1 percent of standard shop cost; the variations in development and distribution loadings were also deficits amounting to 6.5 and 15.8 percent, respectively, of standard shop cost, and the variations between standard and actual cost of material, and for shrinkage and other merchandise-loss recoveries were surpluses of 4.6 and 10 percent, respectively, of standard shop costs. In the case of other apparatus and equipment ⁸ for the same year, all variations were the same as those for substation apparatus with the exception of the development loading deficit, which amounted to 42.7 percent of standard shop cost. In the case of lead-

⁷ Wisconsin Telephone case, 2-U-35, exhibit C-347-3.

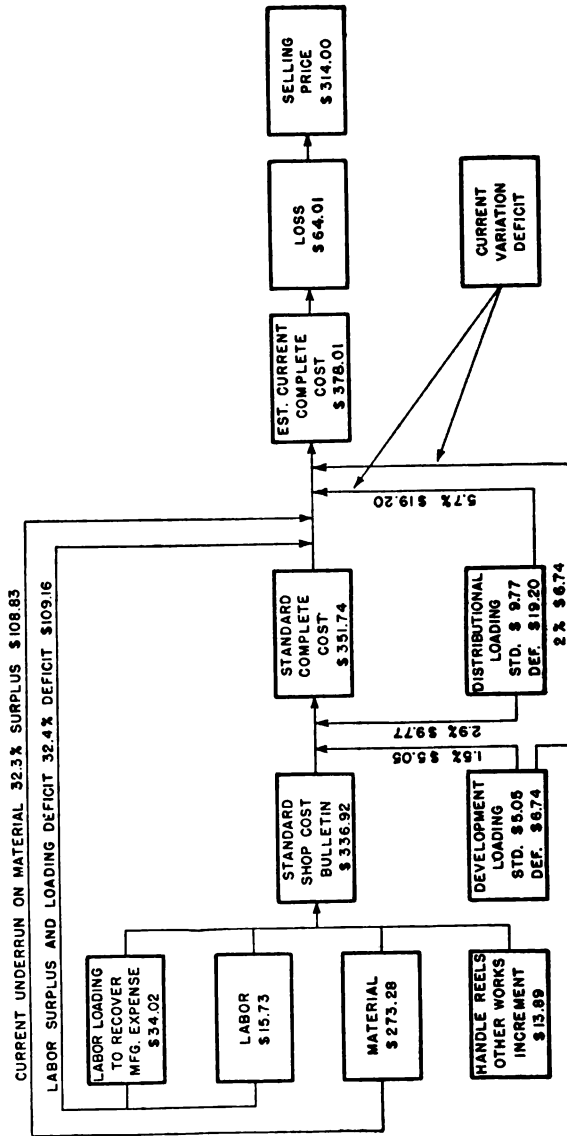
⁸ From letter of R. H. Gregory to Federal Communications Commission, dated May 26, 1936.

CHART 10
ANALYSIS OF WESTERN ELECTRIC COMPANY ESTIMATED COST
OF 102-C-3 HAND TELEPHONE SET SOLD TO BELL AND NON-BELL CUSTOMERS
BASED ON 1934 RESULTS
(PER 100 UNITS)

	MATERIAL	LABOR	LABOR LOAD	SHOP COST	DEVELOP. EXPENSE	DISTRIBUTION EXPENSE	COMPLETE COST		ESTIMATED NET PROFIT	SELLING PRICE TO BELL CO.	SELLING PRICE TO GRAYBAR	GRAYBAR PROFIT MARGIN	SELLING PRICE TO NON-BELL
STANDARD COSTS	\$198.10	+	\$239.13	+	\$766.43	+	\$53.65	+	\$107.30	=	\$927.38		
OVERALL VARIATIONS	\$48.93	+	\$16.74	+	\$353.07	+	\$20.69	+	\$70.50	=	\$468.80		
	-	-	+	+	+	+	+	+	BELL				
									BELL	\$5.14	=	\$1366.50	
									NON-BELL				
ESTIMATED CURRENT COSTS	\$149.17	+	\$222.39	+	\$1119.50	+	\$74.34	+	\$177.80	=	\$1396.18		
									BELL				
									BELL	\$1377.64	+	\$432.17	=
									NON-BELL	\$1404.83	+	\$1837.00	=
									NON-BELL	\$8.65	=		

COMPILED FROM DATA FURNISHED WITH WESTERN ELECTRIC CO. LETTERS TO F.C.C. -
WF HOSFORD 9-25-35 & 11-22-35, R. H. GREGORY'S LETTERS 5-26-36, 6-9-36, & 6-16-36, &
F. B. GLEASON'S LETTERS 9-30-35, 10-3-35, 12-12-35, 4-23-36, 6-19-36, & 6-30-36.

CHART 11
ANALYSIS OF ESTIMATED COST
 1000 FEET OF LEAD COVERED CABLE D-108950
 WESTERN ELECTRIC COMPANY
 CURRENT VARIATIONS FOR FIRST 6 MONTHS 1935
 VARIATIONS BASED ON TOTAL BUSINESS BELL & NON-BELL



SOURCE: Letter dated Sept. 20, 1935, from M. L. Lombard of Western Electric Co., and other data supplied by Western and filed in engineering binder 354 of the F.O.O. Investigation files.

covered cable for 1933,⁹ the deficits in labor and expense loadings, development loading, and distribution loading, amounted to 37, 3.4, and 11.1 percent, respectively, of standard shop costs. These deficits were largely offset by the surplus arising from the variation between standard and actual costs of material, which amounted to 40.9 percent of standard shop costs. If the variation in each element of cost were expressed as a percentage of the standard cost of that element alone, rather than as a percentage of the standard shop cost, the individual variation percentage would, of course, be substantially greater on account of the reduction in the base.

Recent Changes in Western's Manufacturing Procedure Which Directly or Indirectly Affect Costs.

Since the initiation of the special telephone investigation, changes have been made by Western in certain features of its manufacturing organization and procedure, which directly or indirectly affect the accounting for manufacturing costs. These changes are pointed in the direction of supplying information for better control of manufacturing costs. Depreciation rates have also been adjusted downward in certain instances.

(1) *Changes in methods of applying certain cost variations.*—Any changes in methods of computation of costs must be authorized by certain designated company officials. A change was made early in 1936, with particular reference to the method of applying current operating variations. The prior method in most cases consisted of applying variations for each element of shop cost to the standard shop cost as a whole. The new method changed this procedure to one whereby the variation in each element of shop cost is determined and distributed with respect to that particular element of cost only.

(2) *Revision of bulletin or published standard shop costs.*—After a 6-year interval a new schedule of standard costs was made effective as of January 1, 1936. A method was adopted for estimating "normal annual labor hours of operation" for 1936, which differed considerably from the corresponding method which had been used in 1930. In determining normal hours for the loading rates as of 1930, the accounting department at the Hawthorne works took the direct labor hours worked during the last quarter of 1928 and multiplied them by 4 to reflect operation for a full year and used the results as the "normal annual labor hours" of operation for loading rate determination for 1930. The other works used similar procedures for their 1930 estimates. These figures, which were broken down by production departments, or centers, were used throughout the 6-year period 1930 to 1935, inclusive.

In preparing the corresponding estimates for 1936 the following method was adopted: Normal labor hours, on the basis of a 48-hour week, were estimated by the engineer of manufacture from computations of expected machine activity for the year 1936 for each department or production center. The figures were then adjusted to an operating week of 36 hours which was expected to be in effect. Following concurrent consideration of output on this "normal annual labor hour" basis and of the sales department estimate of normal based on customers' requirements, it was thought that the estimate on the "normal annual labor hour" basis was too high in view of expected

⁹ From letter of M. L. Lombard to Federal Communications Commission, dated November 20, 1936.

1936 requirements, and a reduction of 5 percent in total was ordered by the New York office of Western.

(3) *Reorganization of Hawthorne and Kearny works on a product shop basis.*—The operations of Western have been conducted under two general types of departmental lay-outs. The one is the functional type, wherein manufacturing equipment of a given kind has been grouped in one department, such as punch presses, screw machines, drilling machines, etc. Examples of a functional type of departmental lay-out at the Hawthorne plant of Western are: Department 6338, light and medium punch press department; department 6337, automatic screw machine department; department 7219, phenol-plastic molding and finishing department.

The other is the "product shop" type of factory lay-out, wherein a department containing a variety of machines, assembly benches, etc., completely produces a given product or line of products. Examples of the product-shop type of factory lay-out are: Lead-covered-cable and rubber-covered-wire departments of the Point Breeze works, and the telephone-handset department of the Hawthorne works. During the early history of the company much of the manufacture was carried on with the product-shop type of factory lay-out, but as time went on this was largely replaced by the functional type of organization. However, the Point Breeze works, the most recently constructed, has always been operated on a product-shop basis.

Recent changes in the type of lay-out and organization have been made both at the Hawthorne works and the Kearny works. On January 27, 1936, the Kearny works was ordered to be reorganized into product shops. On March 1, 1936, the Hawthorne works received a similar order to reorganize into product shops insofar as certain products were concerned. Two main divisions were established in each instance; one to be responsible for the manufacture of all station apparatus, cable and wire products, the other for the production of central-office equipment and related auxiliary equipment. The work of each division was divided into a number of self-contained product shops. At the same time, certain activities of a service character are handled on a functional basis, even at a plant like Point Breeze, which is entirely organized on the product-shop type of department. These service functions include employee-relations work, the operation of the restaurant, hospital facilities, administration of the pension plan, and others.

(4) *Revision of cost-control reports.*—Following the change in factory lay-out organization from the functional to the product-shop type, the manufacturing department of Western instituted a new form of cost-control report which would enable the management to follow more closely the operating results by product shops and by product classes. The general objectives were to allocate to the various product shops the classes of expense which were directly incurred for them and to record all essential data regarding cost, expense, and other operating results in a manner which would enable the management to keep informed regarding the operations of each shop and the trend of activity and performance week by week. The revision of the cost-control reports does not yet allocate directly to the product shops all the elements of expense which are incurred for them, as,

for instance, the engineer of manufacture expense, which is still distributed more or less uniformly over all products. With the product form of organization a considerable portion of the engineer of manufacture force is assigned directly to each of the product shops, and it is understood that Western is planning to allocate to each shop the portion of this expense assignable to it.

Manufacturing development expense which applies to several classes of product will continue to be spread over all the products on a more or less uniform percentage basis.

Reduction in Depreciation Rates.

Western has also made a change in the depreciation rates used in determining the depreciation expense to be included in the calculation of loading rates. This change consists of a decrease from the former composite rate of 9.3 percent to a present rate of 7.5 percent. Western officials explain the existence of a 9.3-percent rate used in the 1936 bulletin cost as the equivalent of that provided for by the annual rates specified in the sixth edition of the Uniform Accounting Manual for the Electrical Manufacturing Industry, which were prescribed under the "Code of Fair Competition for the Electrical Manufacturing Industry" under which the company was operating in 1934. The 7.5 percent depreciation rate was determined by actuarial studies of the service life of Western's machinery as limited by wear and tear and obsolescence, supplemented by engineering opinion. As subsequent standard costs are revised by main classes of products, loading rates will be changed to provide for depreciation of machinery at the average rate of 7.5 percent instead of 9.3 percent.

Analysis of Western's Accounting Methods and Cost Computations.

As previously stated, the relationship between Western, the Associated Bell companies, and the American Co. are such as to permit the American Co. to occupy the position of sole arbiter of the prices at which Western sells and associated companies buy Western products. It has been stated that if regulation is to be effective and rates are to be equitable as to all companies and all subscribers, the prices charged by Western for each item of telephone equipment must bear a reasonable relationship to cost of producing that item. It necessarily follows that costs must be accurately determined according to sound cost accounting principles. The following discussion is devoted to pointing out some of the reasons why Western's methods of accounting for and computing costs may not afford a satisfactory basis for testing the reasonableness of Western's prices for any particular product in any particular period.

Western's accounting is extremely decentralized. In addition to the corporate books, the company maintains 31 separate sets of subsidiary books. These records are supplemented by a voluminous system of reports, which in many instances are part accounting, part statistical, and part management in nature, are often at variance with the accounts; and are frequently not cohesive in their interrelation. The large number and constantly changing character of these reports add to the difficulty of making an accurate determination of the cost of any of Western's products. An indication of the volume of reports prepared by Western's manufacturing department alone may be

obtained from the following excerpt from the minutes of the Manufacturing Accounting Conference, of March 1930:¹⁰

Information was submitted to the conference which indicated that the number of standard reports in the manufacturing department is as follows:

Number of reports.....	3, 470
Number of reports each year.....	432, 608

It was agreed that accounting superintendents should have made efforts either to eliminate, change, combine, or reduce detail in reports received by them.

Under Western's method of accounting, raw material and stocked supplies are not recorded in the material accounts at actual cost but instead are entered at standard cost. Differences between standard and actual costs of purchases are entered in a number of subaccounts without regard to the individual purchases. The net total differences thus accumulated in these subaccounts are grouped according to each general product class and used by Western to compute the overall variation percentages which are applied to the standard cost of each product, in the respective class, to produce an estimated current cost. As a result, the identification of actual cost of material is lost. This method makes it impossible to determine, from either the general books or the cost accounting records, the actual cost of the material in any particular product and compels reliance on an approximate figure computed from the cost of many materials other than those entering into the product under consideration.

Another objection to Western's methods of accounting for and computing costs arises from the manner in which it accounts for manufacturing overhead expense. In estimating standard costs, Western computes its standard overhead loading rates on the basis of normal production capacity of the manufacturing department, reconciled to the sales department's estimate of normal based on customers' requirements.¹¹

In estimating current costs, Western allocates to each product, by means of overall variation percentages, a share of the difference between (1) the "normal" manufacturing overhead expenses included in standard shop and complete costs through expense loadings, and (2) the total manufacturing overhead expenses incurred during the accounting period. No consideration is given to the fact that some of those expenses in periods of subnormal production (such as from 1931 to date) are incurred in connection with idle plant which contributes nothing toward the production of the goods actually produced. Certain fixed manufacturing overhead expenses, such as depreciation, insurance, taxes, maintenance, etc., do not vary directly with fluctuations in the volume of production. It is generally considered illogical, from the cost accounting viewpoint, that goods produced during a period of low production should bear any portion of the manufacturing overhead expenses incurred in connection with shops, machines, and other plant which were not used in producing those goods. Regardless of the volume of production, the costs of goods produced should include no greater or less portion of manufacturing overhead expenses than they would if production were normal. This principle of cost accounting is generally recognized throughout the manufacturing industry and is advocated by the National Electrical Manufac-

¹⁰ See exhibit 2106, appendix I, sheet 9.

¹¹ "Normal capacity" should be the capacity deemed available after allowing for normal idleness due to set-ups, break-downs, holidays, etc.

turers' Association, of which Western is a member. The abridged edition of the Uniform Accounting Manual for the Electrical Manufacturing Industry, prepared by the association's committee on uniform accounting, of which Western's comptroller was a member, and published under date of May 1936, recommends the following treatment of manufacturing overhead expenses in constructing current costs:

* * * Thus current shop cost is constructed as follows: Direct material, standard cost adjusted to current actual cost; direct labor, standard cost adjusted to current actual cost; shop overhead, normal allowance; shop losses, normal allowance (if treated separately from shop overhead) (sec. 505).

Western's practice of including nonproductive overhead expenses in its estimates of current costs is based upon the theory that all overhead expenses of any year are part of the cost of the product manufactured in that year; and, as a result, these costs are wholly unreliable as a measure of the efficiency of Western's plant or as a basis for testing the reasonableness of its prices, as reflected in the investment of the operating companies in various classes of telephone plant at various times, or in estimates of reproduction cost of the same plant.

This theory finds application not only in Western's estimates of current shop and complete costs of individual products, but also in the preparation of its published statements. For this reason, Western's reported profits from sales provide no better evidence of the reasonableness of Western's prices as a whole than its estimated current costs provide for individual products. In stating profits from sales, all expenses incurred during the accounting period (giving effect, of course, to changes in inventories) with the single exception of interest, are treated by Western as cost of sales. Obviously, the cost of sales, as computed by Western, includes the effect of inventory revaluations, income taxes, merchandising and general expenses, and, of course, manufacturing overhead expense not applicable to the goods sold.¹²

In regard to the treatment to be given manufacturing overhead expenses incurred during the year but not chargeable to the goods produced, the National Electrical Manufacturers' Association, in its Uniform Accounting Manual, states:

Normal rates of shop overhead should be used in making charges for indirect manufacturing expenses to the cost of production * * *. The use of these normal rates will inevitably lead to variances from actual expenses. * * *

There are several ways by which these variances may be treated in the accounts. One * * * is to show the unabsorbed expenses on the current balance sheet under the heading "Deferred charges." * * *

At the end of the fiscal year the balance may be charged or credited, as the case may be, to earned surplus account or allowed to stand. If, however, an unabsorbed balance is allowed to stand as a deferred charge, it is desirable to set up a reserve from surplus of like amount (sec. 301-302).

It is undoubtedly advantageous to Western, and to the American Co. and the associated operating companies as well, to treat all expenses incurred by Western during a particular year as part of the cost of goods manufactured in that year. By so doing, in periods of general business depression which slow down the rate of growth of

¹² An unusual feature of Western's accounting system is that no sales or cost of sales accounts are maintained. The amount of sales is derived from reports prepared from billings to customers. Cost of sales is determined by deducting from the sales thus derived the amount of profits independently obtained by relating sales to standard shop cost of products sold to arrive at basic gross profit, and adjusting this amount by current variations, inventory revaluations, and all other costs with the exception of interest.

telephone plant and Western's rate of production when prices in general are low and there is likely to be agitation for reductions in telephone rates, Western's relatively high estimates of current costs can be pointed to in support of estimates of reproduction cost of telephone plant. Moreover, it is obvious that in the period 1931 to 1935 Western increased its prices to recover at least in part these overhead expenses incurred, which are considered by the special investigation staff not properly chargeable to cost of production during that period. For example, Western's net profit for the year 1936, when production was substantially less than half of capacity, amounted to approximately 10 percent of its net investment. If nonproductive overhead expenses were eliminated from cost of sales, and the result related to the value of plant actually used in producing the goods sold, it is evident that the rate of return would be far greater.

That the infirmities in Western's cost accounting system are recognized by certain accounting officials of the Western Electric Co. is exemplified in the following statements: ¹³

* * * the fact that our highly expensive cost and accounting system failed even to approximate during the year the actual results raises a serious question as to the reliability and adequacy of the entire set-up under which we have been working for years.

* * * we are giving serious consideration to the underlying fundamentals. While we are not prepared at this time to present our recommendations, some of the questions requiring careful consideration are: Should not our cost and accounting system not only tell us the amount of the investment and the results by plants, but also in such detail as will enable the management to put their fingers on the departments responsible for the high investment or unwarranted deficits?

I have been giving considerable thought to the matter of the preparation of the current-cost information for our cost-trend charts and it appears to me that the accuracy derived from the special analysis made by subjects has been smothered in the over-all spread of the difference between figured and book surplus.

Cost Study by the Investigation Staff.

The previous discussion has dealt with certain cost accounting methods and practices followed by Western. It is clear that Western's cost-accounting methods do not provide for the elimination in determining current costs of that portion of the overhead cost resulting from presently nonproductive capacity. It was recognized that no cost-accounting system will provide the actual cost of any particular item or class of product, since the determination of such actual item or class cost involves the allocation of costs incurred for many items jointly, and most systems of allocation of such common costs involve the use of arbitrary formulas based on judgment. It was considered possible, however, to reduce the inherent distortion in cost estimates through a more correct treatment of certain costs which arise from idle plant capacity in years of low production, by distributing manufacturing overheads to individual products as nearly as practicable in proportion to the actual use made of machinery and plant in producing those products. A study was undertaken by the special investigation staff to determine costs which would, in the opinion of the staff, reflect better treatment of costs relating to production capacity not currently in use and include other adjustments considered to be necessary by the staff to conform to generally accepted principles of cost accounting. The purpose of the study was to determine costs which could be considered maximum reasonable costs for

¹³ See letters from S. W. Murkland to R. H. Gregory and from A. O. Scherr to J. M. Stahr, dated May 14, 1930 and Sept. 17, 1930, respectively.

the year 1936. Such costs as this study developed will be hereinafter designated "maxnorm" costs. Western's basic records were the foundation of the study, supplemented by information developed from independent studies. These latter determinations consisted of eliminating certain nonrecurring items of expense, making certain adjustments in Western's costing methods and in certain percentage factors established and applied by Western in its computation of standard and current costs. By several conferences between Western officials and Federal Communications Commission engineers, the desired data were clearly defined and Western suggested means for determining, from its underlying records, such current cost elements as would lend themselves to the objective of ascertaining costs under the methods adopted by the investigation staff.

The elements used to determine these costs were (1) current material costs; (2) current labor costs; and (3) average overhead expense during a 9-year period (1927 to 1935, inclusive) considered to be representative. The technique of developing these costs, and comparison of these costs with Western's costs of record and other pertinent aspects of "maxnorm" costs are set forth in the following discussion.

Method of development of "maxnorm" costs.—Due to limitations as to time and money, it was impossible to make a study of each of the items produced by Western. Certain items were selected as a representative sample for the purpose of the studies. The final list totaled 61 items, of which 34 were manufactured at the Hawthorne Works, 13 at the Kearny works, and 14 at the Point Breeze works. This list represented a carefully selected sample of Western products. It included subscribers' telephone sets, central office switchboard parts (both manual and automatic), wire, lead-covered cable, relays, coils, resistances, etc., typical of the principal classes of an operating telephone plant, and representing as well a large percentage of Western's production. The items selected for study represented approximately 50 percent of all classes of items pertaining to the same general types of equipment produced by Western and approximately 25 percent of Western's total production of telephone apparatus, equipment, rubber-covered wire and lead-covered cable, as measured by the first 10 months' production of 1936. This sample was considered representative, both as to quantity and type, for the purpose for which it was used.

In selecting the 9-year period 1927 to 1935, inclusive, consideration was given to the fact that it included four so-called prosperity years, or years of high production, 1927 to 1930, inclusive; 4 so-called depression years, 1932 to 1935, inclusive; and 1 average year, 1931. It was considered that the 9-year period selected afforded a good cross-section of activity and operating results which could be taken in the absence of definite information as fairly representative of Western's performance and of the relation of the volume of production to plant and organization capacity. This assumption is statistically supported by the fact that the average of Western's net sales over this period amounted to \$214,000,000 annually in contrast to average annual net sales of \$209,000,000 over the 20-year period 1916 to 1935, inclusive.¹⁴ This comparison does not take into account the

¹⁴ Western, in setting up normal expense elements for determining its 1936 bulletin costs, used averages for the 7-year period, 1928-34, inclusive.

large increase in plant capacity during the 20-year period and its effect on the production which might be considered as normal in the later years.

The costs determined in this study reflect current material costs, current labor costs, and average overhead expenses of a recurrent and normal character. The overhead cost per unit of product established on this basis would be somewhat higher than overhead costs per unit of product established on the basis of costs incurred in a particular year when business is good and the volume of production is above average. Conversely, these overhead costs per unit of product would be lower than overhead costs per unit of production established on the basis of costs incurred in a particular year when business is poor and the production volume below average. These differences may have important effects on estimates of reproduction cost as of any particular date or year for any particular telephone property.

(1) Material costs: In determining material costs incorporated in the maxnorm costs, the only deviation from Western's procedure in setting up its 1936 standard costs was to use invoice prices as currently reported by Western instead of the prices estimated by Western in its bulletin costs.

(2) Labor costs: In determining labor costs incorporated in the maxnorm costs, Commission engineers followed a procedure fundamentally similar to Western's method of determining standard (bulletin) labor costs. The identical cost elements are used in both instances and no attempt was made to change Western's basic piece rates. The difference between maxnorm labor costs and Western's current labor costs is stated to be that the maxnorm costs include average actual labor cost for individual items, to which is applied a historical average labor increment,¹⁵ whereas Western's current labor cost is based upon estimates of what is believed will obtain with respect to labor rates and other manufacturing conditions over a normal period during which the standards are to be used, to which is applied the standard labor increment and also a "current variation" reflecting the difference between standard and actual labor costs. In response to a request from the Federal Communications Commission to determine the actual current labor cost comparable to the standard labor cost (excluding labor increment), Western computed the "average actual labor cost" for each operation involved in the manufacture of the 61 selected items.¹⁶ This "average actual labor cost" is referred to as "valid" labor cost. These costs, which Western alleged are the most credible results possible of determination under its present system of cost accounting, were accepted as the basis of maxnorm labor costs. They include both basic¹⁷ and nonbasic¹⁸ labor costs but exclude the labor increment.

¹⁵ Expense variously considered as direct or overhead but charged into direct labor cost of Western, such as vacations, sickness, time off, enforced absence, disability, overtime allowance benefits, pension accruals, Industrial Relations Committees' time, etc.

¹⁶ In determining these costs, Western established the relationship between actual labor costs involved in manufacturing certain products during the first 8 months of 1936, and the standard labor cost of the same products. The factors thus established were used by Western to adjust the standard labor costs for the 61 selected items to the level termed by Western as "average actual labor cost."

¹⁷ Basic labor (Western) the productive labor necessary to perform manufacturing operations, developed by piece-rate studies or operation-cost estimates on rated employees.

¹⁸ Nonbasic labor (Western): Expense such as "supervision" and "service labor" when permanently assigned to productive departments, variously considered as direct labor, indirect labor, or overhead by different manufacturers.

The historical labor-increment ratio which was applied to Western's valid labor costs to develop maxnorm total labor cost was determined from Western's actual charges in the respective works in which the selected items were manufactured. This historical average labor-increment ratio covered the 9-year period 1927 to 1935, inclusive, for Hawthorne and Kearny, and 1931 to 1935, inclusive, for the Point Breeze works.

(3) Overhead expense: There are two types of overhead expenses accumulated by Western; namely, headquarters expense and works manufacturing expense. Headquarters expense consists chiefly of the following: Manufacturing administration, engineer of manufacture, research and development, and distribution. Included in works manufacturing expense are fixed charges, such as depreciation, taxes, and insurance; and variable charges, such as salaries and expense, wages, changes and repairs, supplies and expense tools, works administration and accounting, industrial and public relations, etc.

In establishing standard shop cost, that part of headquarters expense consisting of manufacturing administration, engineer of manufacture, and works manufacturing expense are added by Western as a percentage of direct labor costs. The cost items of research and development and distribution are distributed, in general, as a percentage of standard shop cost. In the determination of maxnorm costs, special-investigation engineers included a part of the research and development cost with those overheads distributed on a labor-time basis as subsequently discussed.

In determining maxnorm overhead expense, loading rates per hour representing the average of actual results obtained by Western during the 9-year period 1927-35 at the Hawthorne and Kearny works and during the 5-year period 1931 to 1935 at the Point Breeze works were developed. Examination disclosed that Western does not employ the same method of distributing costs at all three works. The method in use at the Point Breeze works excludes incentive allowance from operation-work times, whereas at the Hawthorne and Kearny works the incentive allowance is included. In view of the fact that the inclusion of any factors other than operating times in the establishment of loading rates inevitably results in overabsorption or underabsorption of actual overheads against actual hours worked, the times used by Commission engineers excluded incentive allowances at all three works.¹⁰ The loading rates so determined were applied to the maxnorm working hours so as to reflect the actual expense experience for the actual hours worked.

The investigation engineers adopted the "labor time" basis for distributing the shop overhead cost between the various products concerned. When this basis of distribution is used the total shop overhead for each production department or production center is divided by the number of productive hours of basic labor employed in it. The resultant hourly overhead cost rate is then applied to the hours of basic labor expended on each product in order to arrive at the amount of shop overhead cost assignable to each product. Upon request, Western computed the valid labor times for all of the operations involved in the manufacture of the 61 selected items. It seemed advisable

¹⁰ Western apparently recognized this principle in costing methods in that this method is effective in the Point Breeze works.

to make an independent check of these times. This was accomplished by a time-study staff organized for this purpose. Time was not available to verify labor time for all of the operations in the fabrication of the selected items. Accordingly, the sampling method was resorted to and the modal average time ratio²⁰ was computed for each work, based on a sample considered to be representative. This ratio was then used as a basis for adjusting the operation time as reported by Western for all of the operations on the selected items manufactured at each of the works.²¹ These adjusted labor time figures were used by special investigation engineers as a basis for distributing overhead costs as between the different products included.

An accepted logical basis for the allocation of overhead expense is a time factor such as machine hours of operation or direct labor hours. Due to the fact that the information available from Western's records was not sufficient to permit the determination of machine-hour rates, labor-hour rates were used for the allocation of maxnorm overhead expenses in the several works of Western.

Depreciation rates used by Western in computing its standard costs were adjusted by the investigation engineers on a basis different from that used with respect to other overhead costs. Depreciation of machinery and service equipment was computed on Western book values at rates determined by Western's chief statistician as the result of actuarial studies. The rate for buildings was taken from the rates recommended by the Bureau of Internal Revenue for various classes of buildings. The actual reserve accumulated on the company's books was considered in determining the annual rate used for buildings, machinery, and service equipment in the maxnorm study. Average actual depreciation charges made by Western were used with respect to small tools and patterns and furniture and fixtures.

(4) Development expense: In the determination of maxnorm development expense, consideration was given to a segregation of this expense into "development and research" and "current engineering." The first classification concerns expenses incurred in the development of anticipated or future products. The second classification concerns expenses incurred in connection with products currently or previously manufactured. The Bell Telephone Laboratories furnished a breakdown of Western's part of its development expense for the years 1927 to 1935, inclusive. To the average of expenses for this 9-year period, concerned with current engineering, there were added average expenses by Western at its works properly chargeable to the development. These average expenses, without eliminations, were accepted as the maxnorm averages for these two classes of development expense.

The expenses incurred in connection with current engineering were allocated to shop departments on the basis used by Western in allocating its 1936 normal engineer of manufacture expenses. That part of the development expense classified "development and research" was allocated by merchandise classes as a percentage of total shop cost of the complete apparatus, by methods paralleling Western's present methods of setting its distribution rates.

²⁰ The modal average is the most frequently occurring measurement in a frequency distribution derived from a series of measurements.

²¹ The detailed methods employed in making time studies and in computing the several ratios for the selected items of telephone apparatus and equipment produced at the Hawthorne, Kearny, and Point Breeze works are presented in exhibit 2106, ch. 3.

(5) **Distribution expense:** In the determination of maxnorm distribution expense, substantially the same procedure was followed as in the determination of other overhead expense. Western's actual expenditures were averaged for the 9-year period 1927 to 1935, inclusive, and nonrecurrent and abnormal items were eliminated, in keeping with the practice already adopted by Western. The 9-year adjusted average distribution expense was prorated in accordance with Western's practice in setting up the 1936 standard costs.

Comparison of Maxnorm Costs With Western's Costs of Record.

A review of the various elements of maxnorm costs indicates that Western's basic records were used in all computations, and the principal difference between maxnorm costs and Western's costs of record is represented by some reallocations of costs between elements, and the use of 9-year average overhead expenses, which procedure involved the elimination of certain abnormal and nonrecurrent expenses. In order to permit detailed comparisons of Western's costs of record with maxnorm costs in all of their elements for each and every piece part and assembly studied, a detailed record²² was set up to show comparisons between Western's standard and current costs with maxnorm costs.

A summary of these cost comparisons indicates that Western's standard shop costs ranged from 57.3 to 129 percent of maxnorm shop costs, Western's current shop costs ranged from 62.8 to 149.3 percent of maxnorm shop costs, and Western's current complete costs ranged from 70.9 to 163 percent of maxnorm complete costs. For 22 of the 61 items, maxnorm shop costs exceeded Western's current shop costs, and in 12 instances maxnorm complete costs were greater than Western's current complete costs. Western's average selling prices, in 1936, for these 61 items, ranged from 73.9 to 328.4 percent of Western's current complete costs, and from 74.8 to 293.5 percent of maxnorm complete costs.²³

The American Co. has stated that there are many errors in the computations underlying the above figures indicating the relationship of maxnorm to Western's current costs. The specific errors in the exhibits were not all pointed out, but even if it is admitted that there are errors in the computations and that the sample selected for study is not large enough or truly representative, it is clear that the application of methods which produced the maxnorm costs for 1936 will produce costs much lower than the current complete costs as computed by Western for the same period.

Relation of Western's Prices to Costs.

The preceding discussion has dealt with the estimates of cost developed by Western in connection with its manufactured products. The prices paid by associated companies for Western products apparently do not have any logical relation to costs as determined by Western. The lack of a consistent and rational relationship between Western's standard complete costs and selling prices to Bell operating companies is apparent for all telephone products. The range of these

²² Samples of these records describing in detail the procedure of determining maxnorm costs and comparisons with Western's costs of record are shown in appendixes XXXVII, XXXVIII, and XXXIX of Federal Communications Commission exhibit 2106.

²³ See exhibit 2106, pp. 356-357.

excess percentages varies widely, as shown in the following tabulation (each range applies to a group of items):

Range of excess of selling price over "standard complete cost"

Apparatus group from which items were selected:

No. 11 common battery switchboard.....	27 to 175 percent.
No. 1 common battery switchboard.....	—5.5 to 110 percent.
Machine switching equipment.....	46 to 168 percent.
Substation apparatus.....	5 to 218 percent.
Lead-covered cable.....	19 to 50 percent.
Wire.....	—2 to 128 percent.

The record shows a wide variation in the relation of selling prices to standard complete costs, both within groups of items and between groups. In order that the relationship of this subject to the general subject of telephone rates may not be lost sight of, reference is again made to the fact that the only issue in a proceeding involving telephone rates may be the level of exchange rates in a single community; that the composition of the plant, which is the basis for the fair value upon which a return is to be earned, may be quite different in different communities; that there may be included in the investment account and in any estimate of reproduction cost new based on Western prices, unjustifiably different rates of profit.

Comparison of Western Prices With Those of Independent Telephone Manufacturers for Comparable Items.

State Public Utility Commissions and courts are aware of the importance of Western's prices in the determination of fair value, and in recent rate cases these prices have been attacked as not constituting a proper basis upon which to estimate the reproduction cost of the telephone plant involved. In the *Chicago rate case*, in 1933,²⁴ the city's representatives argued that the increases in prices of apparatus and equipment made by Western subsequent to 1929 should be disregarded in determining reproduction cost and fair value. The Federal district court found the average increase in Western's prices amounted to 10.2 percent and deducted this percentage from the company's 1931 and 1932 estimates of reproduction cost.²⁵ Also, in 1935,²⁶ the Wisconsin commission, in estimating the fair value of the Wisconsin Telephone Co.'s property, used Western 1929 apparatus and equipment prices, which were substantially lower than those currently in effect. The reluctance of State commissions to accept Western's prices as reasonable has compelled the American Co. to attempt to justify these prices in rate cases.

Price Comparisons Made by the American Co. in Defense of Western Prices.

The company's thesis has been that "the Western Electric Co.'s prices to associated companies may be regarded as reasonable if, on the average, they are not higher than the prices charged by other suppliers for comparable materials, and if Western's profits are reasonable."²⁷ A department has been maintained by the American Co. for many years which makes comparisons of Western prices with those of independent manufacturers for such classes of materials as are

²⁴ *Illinois Bell Telephone Co. v. Gilbert, et al.* (City of Chicago, intervener), 3 F. Supp. 595.

²⁵ *Ibid.*

²⁶ *Re Wisconsin Telephone Co.*, 2-U-35.

²⁷ From American Telephone & Telegraph Co. memorandum dated April 23, 1935, reproduced in exhibit 292.

considered comparable. The purpose, as stated by the head of that department, is to determine whether Western's prices are on the most-favored-customer basis, as required by Western's contracts with the associated companies, and are reasonable. The Associated Bell operating companies have used these American Co. studies in rate proceedings in an attempt to prove the reasonableness of their standard supply and manufacturing contracts with Western and to justify their estimates of reproduction cost new of telephone plant, using Western catalog prices of apparatus and equipment as a basis for material cost. The principal price studies which have been used in this way in recent years are described by the company as follows: ²⁸

A comparison of the prices of certain types of unassembled telephone apparatus, excluding panel-dial central office equipment, all assembled units, toll apparatus such as repeaters and carrier equipment, loading coils, radio and special commercial products.

A comparison of the prices charged by Western for certain types of step-by-step automatic central office equipment with those of the Automatic Electric Co. to the general trade.

A comparison of prices charged by Western and independent suppliers for certain types of lead-covered, paper-insulated cable.

A comparison of Western's prices to the associated companies on certain items of supplies not manufactured by it, but purchased from others, with prices of the Graybar and Automatic Electric Cos.

Studies covering a portion of the purchases made in certain years by certain associated companies comparing Western Electric prices with the lowest prices in the general trade taken from independent manufacturers' catalogs of unassembled apparatus and equipment, less current trade discounts.

Of these price comparison studies, that relating to unassembled telephone apparatus is the most important from the standpoint of the volume of sales compared. In the preparation of the price comparison studies of unassembled telephone apparatus and step-by-step equipment, this department of the American Co. selects items produced by various independent telephone manufacturers which are considered comparable to certain Western products and compares the prices of unassembled piece parts. For each item the price used is an average for the particular year, weighted by the portion of the year that the price was in effect. The amounts to be compared are determined by multiplying the quantity sold by Western in the particular year by the independent manufacturer's published piece-part prices, less quantity discounts, and by Western prices to Associated Bell companies. The studies of unassembled apparatus, in general, compare by classes of products the total price of each supplier with the comparable Western price to associated companies, and show for each class each independent supplier's price and the lowest in the general trade as a percent of Western's price.

The method used by the American Co. in compiling price comparison studies of lead-covered cable is the reverse of that used in comparing prices for unassembled apparatus and step-by-step equipment. In this instance the relationship between Western's prices and independent suppliers' prices is based upon a portion of the sales made by independent suppliers during the year, and is obtained by comparing Western's prices averaged on a time-in-effect basis with the prices reported as having been charged by independent suppliers.

The results of American Co. studies of unassembled apparatus, step-by-step equipment, and lead-covered cable indicate that inde-

²⁸ Reproduced in exhibit 292, appendix 1, p. 11.

pendent suppliers' prices of telephone apparatus, equipment, and lead-covered cable in all instances are considerably higher than those of Western to Bell System companies. However, in judging the weight to be given to the American Co.'s price comparison studies, as establishing the reasonableness of Western's prices to the associated companies for telephone apparatus, equipment, and material, the following considerations are of importance:

The extent to which the prices of independent suppliers, with which comparisons are made, may be influenced by relations with Western.

The extent to which the items compared are representative of Western's sales and of the associated companies' telephone plant.

The difference in volume of sales as between Western and independents.

The extent to which Western's and independents' markets are comparable.

The extent to which the prices have been stated on a comparable basis.

Each of these factors, which affect the validity of the company's price comparison studies, is discussed below.

Western-Independent Relations.

Western-Automatic Electric Co.—Except for step-by-step dial equipment manufactured by Western during the period 1926 to 1932, inclusive, the Bell System requirements of this type of equipment have been purchased by Western from the Automatic Electric Co.²⁹ Sales of such equipment to Western have constituted approximately 50 percent of the total sales of Automatic Electric Co. during the period 1919 to 1935, inclusive.³⁰ In 1927 and 1928 the Automatic Co. showed a loss of \$283,000 on this business. Profits in the other years of this period varied between a maximum of 18.3 percent in 1926 and a minimum of 2.6 percent in 1934.

A review of the contractual relations between the Automatic Electric Co. and Western, for the period 1919 to 1935, inclusive, indicates that Western has not assumed any corporate or managerial jurisdiction over the affairs of Automatic Electric Co., but has periodically increased the rigidity of successive contracts which denied Automatic freedom of action in manufacturing and marketing operations. In the later contracts, Western set the basis for prices to be paid Automatic and then inserted a provision to the effect that Automatic's prices to Western shall at all times be as low as the lowest prices charged for similar apparatus by Automatic or by any company which the Automatic might authorize to manufacture or sell in the United States to its or their most-favored customer.

Western-Stromberg-Carlson.—By a series of contracts beginning in June 1920 Stromberg-Carlson agreed to manufacture for Western PBX switchboards, apparatus, piece parts, and switchboard cords. During the 9-year period 1926 to 1934, inclusive, 32 percent of the total net sales of telephone apparatus and equipment of Stromberg consisted of sales to Western.³¹

Western-Kellogg.—For a number of years prior to 1935 the Kellogg Switchboard & Supply Co. sold substantial amounts of telephone apparatus and equipment to Western. During the 9-year period 1926 to 1934, inclusive, 17 percent of the total net sales of the Kellogg

²⁹ See letter from F. J. Hammel, Western's general price manager, dated Jan. 29, 1937, Binder No. 134, contained in the Federal Communications Commission files.

³⁰ See exhibit 292, ch. 1, table 3, p. 11.

³¹ See exhibit 292, ch. 1, table 5, p. 16.

Co. consisted of sales to Western.³² Since 1935, Western has made no purchases from the Kellogg Switchboard & Supply Co.³³

Western-Graybar.—Effective December 31, 1920, the supply department of Western was divided into two operating divisions, one to handle telephone apparatus and supplies, the other to handle general electrical supplies. By 1925, the general electrical-supply business of Western had expanded so rapidly that it had become one of the largest merchandisers of electrical supplies in the world. In order to give this business separate corporate identity, a new corporation, the Graybar Electric Co. was formed on December 11, 1925. It was 100 percent owned by Western. The new company continued to sell telephonic equipment manufactured by Western to non-Bell companies. In addition, it sold, under its trade name, various electrical apparatus and supplies. Its largest sales were of household electrical appliances and electric power and lighting supplies. On January 1, 1927, Western transferred its holdings in the Graybar Electric Co. to Electrical Research Products, Inc., a 100-percent Western-owned corporation. On December 31, 1928, the Graybar Electric Co. was sold to the Graybar Management Corporation, the common stock of which is owned by Graybar Electric Co. employees, subject to certain rights retained by Electrical Research Products, Inc., pending retirement of preferred stock of Graybar Management Co., owned by Electrical Research Products, Inc.

The Graybar Co. is Western's exclusive sales agent for telephone apparatus and equipment to independent telephone companies and others in the United States which do not purchase materials and supplies under Western's standard supply contract. The Graybar Co.'s price list is substantially Western's price list, plus a jobbing markup. According to the terms of the standard supply contract, Western's prices to Graybar cannot be lower than Western's prices to associated companies. The Graybar prices, therefore, are always higher than Western's prices to associated companies of the Bell System.

Nature of Sample Included in American Co. Studies.

With respect to the extent to which the American Co.'s price comparison studies are representative of Western sales, data compiled by the American Co. for the year 1934 indicate that Western's computed price for the apparatus and equipment included in the studies amounted to slightly over \$19,000,000, or about one-third of the amount of Western's total sales to Bell companies of materials of its own manufacture. Of this total, \$17,175,000 was used as representing unassembled telephone apparatus, which was composed 29 percent of central office and private branch-exchange equipment, 54 percent of station apparatus, and 17 percent of other sales. The remaining sales for which price comparisons were made include \$424,000 of step-by-step equipment, \$819,000 of equipment specifications, and \$729,000 of lead-covered cable. These classes of apparatus, equipment, and materials, for which specific price comparisons have been made, are claimed by the company to be representative of approximately 60 percent of Western's sales of apparatus, equip-

³² See exhibit 292, ch. 1, table 7, p. 18.

³³ The Kellogg Co. brought suit against Western in 1934 for alleged infringement of patents relating to straightforward trunking in multioffice exchanges. This may be the reason for discontinuance of Western purchases from Kellogg.

ment, and materials of its own manufacture.³⁴ The remaining 40 percent of Western's sales in 1934, for which no price comparisons have been made, includes principally panel central-office equipment, installation charges for all types of central-office equipment, repeater and carrier equipment, loading coils, distributing-house shop manufactures, other central-office equipment, and private-branch-exchange switchboards. These classes of Western's sales differ radically in type from those for which price comparisons were made. The 60-percent sample for which comparisons were made cannot be considered, therefore, as a representative sample selected at random from all of Western's manufactures, nor is any claim made by the American Co. that it is representative of Western's entire production. The American Co. does claim that the specific items compared in 1934 are representative of classes constituting about 60 percent of Western's 1934 sales of its manufactured telephone products.

The extent of the sample of Western's sales is indicated by the fact that the 1934 study of unassembled telephone apparatus included price comparisons of 2,633 types of items selected from a total of 8,798 types of items which were considered capable of comparison with independents' products. The 8,798 types are but a part of the total in the classes to which they belong. The American Co. studies do not show the total number of types of items manufactured in these classes. Similarly the 1934 step-by-step equipment study included 56 percent and the lead-covered cable study 25 percent of Western's sales of these two classes. That all types of products are not uniformly priced as regards the relation of price to cost of manufacture has been affirmed by the American Co.³⁵ Hence a careful selection of items with respect to price would be required in order to obtain a representative sample. Otherwise, the sample might include undue proportion of items upon which Western has made little or no profit. The selection was actually made with a view to physical comparability with independents' products and not with a view to obtaining a representative sample of prices. The selection was limited to those types of items which the company considered comparable. The claim has not been made by the company that the items compared are representative of Western's sales in respect to prices.

As regards representativeness of the sample of independents' products compared with those of Western, many of those types manufactured in large quantities by the independents for use in their standard equipment assemblies, such as line and cut-off relays, are not included at all. Many of the types of independent apparatus and equipment selected for price comparisons by the American Co. are types which do not appear in the standard equipment produced in quantities. To illustrate, of the 1,493 types of Stromberg relays which are compared with Western's relays, 600 have never been produced in any quantity and Stromberg does not have any cost figures applying to them.³⁶ That the Stromberg items selected for comparison are not representative of its sales is further indicated by the fact that 14 out of 26 types of relays used in standard circuits are compared. No

³⁴ American Co. study entitled "Representativeness of E. V. Cox' General Studies of Telephone Apparatus, Equipment, and Cable," dated June 16, 1937 (No. 1080-C), Engineering Binder No. 135, contained in the Federal Communications Commission files.

³⁵ See comments on exhibit 2091, vol. No. 25, p. 4.

³⁶ See letter from R. H. Barger, sales engineer, Stromberg-Carlson Telephone Manufacturing Co., dated May 29, 1936, Engineering Binder No. 143, contained in Federal Communications Commission files.

switchboard keys for standard assemblies, of which there are 4 types, are compared. The majority of less expensive items, such as cord weights, lamps, jacks, and plugs, are compared.

The question of the extent to which the American Co.'s annual price-comparison studies are representative of the materials in the associated companies' plant may be approached from a consideration of what proportion of all the designs of apparatus in plants of the associated companies is produced by Western during the year in question. This matter is particularly significant from the standpoint of justifying the use of Western's prices in reproduction cost estimates because there is no uniform relationship between costs of manufacture and selling prices. In the first place, Western's sales of apparatus and equipment in any one year or over a period of years are not representative of the same classes of apparatus and equipment in the plants of the associated companies because the different classes placed in service each year are retired during succeeding years at widely differing rates. Western's sales for replacements of classes having high retirement rates will be relatively larger than of classes having low retirement rates. It is also well known that telephone plants include much material no longer standard and hence not included in Western's sales in any recent year. To illustrate, a study made by Western³⁷ shows that in 1931, a year in which its sales exceeded the average annual sales for the periods 1920 to 1934 and 1926 to 1934, Western produced 22,915 different designs of apparatus out of a total of 43,000 existing in Bell System plants.

Volume of Sales and Its Effect Upon Prices.

The American Co. officials appearing as witnesses on behalf of associated companies in rate cases have stated that Western's greater production and sales volume should serve to maintain its manufacturing costs and selling prices at levels below those of independent suppliers with which comparisons are made. In the *Baltimore Telephone case*,³⁸ in 1934, an assistant vice president of the American Co. testified as follows:

The Western Electric, because of its volume, is in a position to have cheaper processes.

Again, in the *Wisconsin Telephone case*,³⁹ the same witness, in answer to a question as to why the prices of independent telephone manufacturing companies in his studies appeared to be higher than those of the Western for individual piece parts, answered—

The other suppliers have smaller volume; they have expenses that the Western Electric Co. does not have to meet.

The sales volume of the independent telephone manufacturing companies is extremely small when compared with that of Western. For example, in 1934, Western produced 663,749 hand telephone sets, the Kellogg Switchboard & Supply Co., 4,457, the Stromberg-Carlson Telephone Manufacturing Co., 6,839, and the Automatic Electric Co., 27,820 units. During the period 1930 to 1934, inclusive, Western produced 4,106,672 hand telephone sets; Kellogg, 31,416; Stromberg-Carlson, 30,493; and Automatic, 124,530. These figures include hand telephone sets of all types produced by each of the companies

³⁷ Engineering Binder No. 301, contained in the Federal Communications Commission files.

³⁸ *West v. Chesapeake and Potomac Telephone Co.*, 295 U. S. 662, Transcript of Record, vol. I, p. 169.

³⁹ *Wisconsin Telephone Co. case*, 2-U-35.

and are not limited to comparable types. Western's dominant position in the field of telephone manufacturing and sales is further indicated by the fact that during the period 1926 to 1934, inclusive, Western's sales of telephone apparatus, equipment, and materials amounted to more than 90 percent of the total of such sales made by the eight leading telephone manufacturers and suppliers in the United States. With respect to total sales of all products in 1934, Western's sales amounted to \$91,807,000, Kellogg's, \$1,470,000; Stromberg-Carlson's, \$2,357,832; and Automatic's, \$4,535,999. In spite of this great difference in volume of production and sales, no allowance has been made in the American Co.'s price comparisons for the lower production costs which independent manufacturers admittedly could attain with the larger volume of production available to Western.

Comparability of Markets.

Western shares with other manufacturers the risk of possible cancelation of orders during the periods of depression and has the further responsibility of attempting to meet at all times the maximum demands of the Bell System companies in periods of business expansion. However, Western operates under the distinct advantage of having advance knowledge of the Bell System requirements, and Western's records show that for the 15-year period 1920 to 1934, inclusive, each year's production was approximately equal to the estimated requirements of the Bell System companies prepared in the fall of the preceding year with the exception of the 3 years 1930, 1931, and 1932.⁴⁰ The independent telephone manufacturers do not have comparable information to guide their manufacturing and pricing policies.

Comparability of Prices Used.

In judging the degree of comparability of prices used in the American Co. studies consideration must be given to the fact that the independent suppliers' prices include sales expense and the independent manufacturers are subject to credit risk. Sales expense does not enter into any of Western's prices and Western has, for all practical purposes, no credit risk.

The independent suppliers' prices for apparatus and equipment price comparisons were obtained from price lists and discount sheets supplied to customers by independent manufacturers. These prices include both engineering expense and sales expense. Equipment engineering is billed separately to the associated companies and is not included in the Western prices used for purposes of comparison. Western's prices of complete assemblies of apparatus or equipment are built up from the prices of the corresponding piece parts and sub-assemblies as listed in its published price lists. On the other hand, the prices quoted by independents for complete assemblies are considerably lower than would result from the summation of their quoted piece-part and subassembly prices. The American Co.'s comparisons are of unassembled Western's with independent suppliers' prices shown in their published price lists, without adjustment to reflect the lower prices charged for such apparatus and equipment when sold as assemblies. A large part of the items included in the American Co. study of apparatus unassembled is predominantly sold as parts of assemblies.

⁴⁰ Federal Communications Commission Engineering Binder No. 301, charts A and B.

The price-comparison studies entitled "Telephone Apparatus Unassembled" state that panel, step-by-step, and manual switchboards and toll assemblies are excluded. This is true insofar as the kind of items selected for pricing is concerned, but the volume priced includes a large proportion of the piece-part items actually sold by Western to associated Bell companies as parts of complete assemblies. The American Co. has included the total sales of such items in its studies and priced them in accordance with independent manufacturers' piece-part prices despite the admitted fact that Kellogg and Stromberg-Carlson piece-part prices must be adjusted downward when complete assemblies are under consideration. The importance of this difference in pricing methods is emphasized by the fact that only about 25 percent of the telephone equipment sales of independent manufacturers represent piece parts for repairs, replacements, or additions to existing central-office installations. The balance, or 75 percent, consists of initial central-office installations, the bids for which are made in the form of a single, over-all figure. This condition also applies to PBX equipment, hand sets, desk stands, and other substation apparatus.

In order to illustrate the effect of the difference in pricing methods for apparatus and equipment a comparison was made by the special investigation staff of Western's prices with Kellogg's and Stromberg's piece-part and complete-assembly prices for comparable circuits as of January 1, 1936. The circuits compared constitute more than 50 percent of the material cost of a typical small common battery switchboard of the multiple line lamp type supplied by Western, Kellogg, and Stromberg. Sales of such switchboards constitute a substantial portion of the independent suppliers' total sales. Western's and the independent suppliers' piece-part prices for the apparatus included in these circuits were obtained from Western's price lists of telephone apparatus to Bell companies and from the independent suppliers' published piece-part price lists and discounts. These are the price data which the American Co. employs in compiling its price comparison studies of unassembled apparatus. The independent suppliers' assembled prices were obtained from price lists used by Kellogg and Stromberg in quoting prices for central office installations. These assembled switchboard price lists are used by Kellogg and Stromberg to determine initial bid and sale prices for central office equipment under noncompetitive conditions. Sales records of the two companies show that on actual sales these list prices are often reduced. The assembled list prices of these switchboard circuits, and also the list prices less average discounts as indicated by Kellogg and Stromberg records of recent sales and bid prices, are summarized in table 50. The prices for these circuits, weighted in proportion to the quantities found in a representative switchboard, are also summarized in table 50. In table 50 unit-estimating prices of both Kellogg and Stromberg companies, have been adjusted to make them comparable to Western prices by deducting 6 percent for equipment engineering, which is billed separately by Western to the associated companies, and by adding 1 percent for freight, as freight is included in Western's price.

This table shows Kellogg's piece-part price is 161 percent of Western's price, and Stromberg's piece-part price is 140 percent of Western's price, whereas Kellogg's complete assembly list price is only 90 percent of Western's price and Stromberg's complete assembly price is

98 percent of Western's price. If reductions are made for average discounts actually allowed on sales, Kellogg's and Stromberg's prices for these circuits amount to 83 percent and 88 percent, respectively, of Western's prices. The results do not, of course, reflect any weighting on the basis of the relative amounts of equipment sold by the independents assembled and unassembled, respectively.

Table 50 discloses that Kellogg's prices for the selected items of switchboard equipment when sold as a part of the complete assembly amount approximately to 56 percent of the price of similar apparatus when sold on the basis of piece-part prices. Similarly, Stromberg's price for the same equipment when sold as a part of a complete assembly amounts approximately to 70 percent of the price that would have been charged had the same equipment been sold unassembled.⁴¹

TABLE 50.—Comparisons of Western Electric Co., Kellogg Switchboard & Supply Co., and Stromberg-Carlson Telephone Manufacturing Co. prices for principal components of a manual common battery switchboard

Item	Western Electric Co. No. 11 type switchboard	Kellogg Switchboard & Supply Co. master built switchboard			Stromberg-Carlson Telephone Manufacturing Co. superservice switchboard		
	Prices to Associated Bell companies	Published piece-part prices	Assembled units		Published piece-part prices	Assembled units	
			List prices for complete unit	Sales prices, including average discount		List prices for complete unit	Sales prices, including average discount
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Subscriber's line circuits:							
Number of circuits.....	4,000	4,000	4,000	4,000	4,000	4,000	4,000
Unit cost per circuit.....	\$3.61	\$6.51	\$3.17	\$2.94	\$4.70	\$3.23	\$2.91
Total cost.....	\$14,440	\$26,040	\$12,680	\$11,760	\$18,800	\$12,920	\$11,640
Cord circuits:							
Number of circuits.....	168	168	168	168	168	168	168
Unit cost per circuit.....	\$37.61	\$51.49	\$29.53	\$27.34	\$59.70	\$37.44	\$33.70
Total cost.....	\$6,318	\$8,650	\$4,961	\$4,593	\$10,030	\$6,290	\$5,662
Subscriber's multiple:							
Number of multiple jacks...	12,000	12,000	12,000	12,000	12,000	12,000	12,000
Unit cost per 20 jacks.....	\$13.40	\$19.26	\$13.70	\$12.71	\$18.80	\$15.01	\$13.51
Total cost.....	\$8,040	\$11,556	\$8,220	\$7,626	\$11,280	\$9,006	\$8,106
Grand total.....	\$28,798	\$46,246	\$25,861	\$23,979	\$40,110	\$28,216	\$25,408
Percent of Western price:							
Subscriber's line circuits...	100	180	88	81	130	89	81
Cord circuits.....	100	137	79	73	159	99.6	90
Subscriber's multiple.....	100	144	102	95	140	112	101
Grand total.....	100	161	90	83	139	98	88

Source: Exhibit 292, p. 187.

The American Co. claims that, with respect to the equipment units upon which table 50 is based, the quantity of the multiple is disproportionately small and the line circuits are disproportionately large

⁴¹ It is of interest to note that the American Co. at p. 117 of its brief and at p. 79 of its Comments on exhibit 292 challenged the conclusion that Stromberg's prices for assembled switchboard apparatus amounted to 70 percent of its piece-part prices for the same equipment. At the time these statements were written, the company had before it the results of a study prepared by its engineers which showed an even greater disparity.

and that this results in understating the composite independent price for assemblies because the multiple bears the smallest discount from the piece-part price and line equipment the largest. This claim was checked by comparison of the assumed typical switchboard with the corresponding average switchboard developed from field data by the American Co. Had table 50 been based upon quantities of equipment reflecting the average relationship of multiple and line circuits to cord circuits as found by the American Co. to exist in all manual common battery switchboards having in general 4,000 multiples or less which were in use in the Bell System at January 1, 1934, Kellogg's composite list price for assemblies would have been 87 percent of Western's price instead of 90 percent, and the relation of Stromberg-Carlson's prices to Western's would have remained unchanged at 98 percent. This results from the fact that table 50 includes a greater number of multiples per line than do the Bell System manual common battery switchboards having 4,000 multiples or less, as shown by the American Co. study.

As stated previously, the American Co. in its comparisons of prices of unassembled telephone apparatus uses Western's and independent suppliers' prices applicable to sales of piece parts for items actually sold in assemblies, on which Western's prices are actually higher because of additional charges for engineering, and independents' prices are actually much lower. The American Co. expresses the opinion in its Comments that any allowance in favor of the independents to which this difference in pricing entitles them is fully offset by comparing Western's prices with the lowest in the general trade. In support of this opinion the American Co. refers to a detailed study prepared by its engineers which purports to give consideration to these differences in pricing. This study⁴² indicates Stromberg's prices to be 126 percent of Western's, whereas the American Co.'s study of unassembled apparatus shows that the lowest prices in the general trade are 122 percent of Western's. The American Co. uses these results as support for the opinion that the differences between Western's and independents' pricing practices are offset by comparing Western's prices with the lowest prices in the general trade and also concludes that, since Stromberg secures its fair share of the telephone business in the independent field, studies for other suppliers would show similar results.

Analysis of this study showed that three distinct steps were involved: (a) Determination of Western's and Stromberg's piece-part or unassembled apparatus prices for Western's sales of apparatus and equipment, (b) adjustment of the piece-part prices of apparatus and equipment sold by Western as new switchboards and additions to existing switchboards to reflect the level of prices charged for such sales, and (c) the combination of prices for apparatus and equipment sold for switchboard use with the price for apparatus sold unassembled into a weighted average.

The investigation engineers have considered the methods used by the company in each of the above steps to be subject to criticism. These criticisms are briefly as follows:

⁴² The results of this study were submitted as an exhibit in the Wisconsin Telephone Co. rate case (*Wisconsin Telephone Co. v. Public Service Commission*, circuit court, Dane County, Wis.), and the working papers supporting it have been made available to the Federal Communications Commission.

(1) In determining the prices which Stromberg would have charged for Western's sales when considered as composed entirely of unassembled apparatus, only a limited number of items were allegedly directly comparable. Price ratios derived from items considered comparable were applied to apparatus which was dissimilar in design and construction from any apparatus manufactured by Stromberg. For items of equipment either purchased for resale or not sold by Stromberg the American Co. used the lowest price in the general trade. The lack of any rational relation between Western's alleged manufacturing costs and prices renders the validity of using price ratios derived from one group of items to estimate the prices of another group of items extremely doubtful.

(2) In the price comparison for unassembled apparatus, which the American Co. included in its final results, no consideration was given to the fact that independent suppliers' prices for complete units of substation apparatus are lower than the summation of the prices of the items of apparatus used in such assemblies.

The American Co. asserts in its price comparison study of unassembled apparatus that the Stromberg and Kellogg Cos. use special unpublished prices for switchboard apparatus sold in assemblies that are lower than prices for apparatus sold loose and that an adjustment for such pricing is applicable to the pricing of these companies for items of their own manufacture sold in assemblies but not for apparatus sold unassembled, handsets, desk stands and other substation apparatus. With respect to Kellogg's and Stromberg's prices for substation apparatus the American Co.'s statement is incorrect because both companies' prices for substation apparatus sold assembled are less than the summation of the piece-part prices for the apparatus items used in such assemblies. The company's study, which is claimed to give full consideration of the differences in Stromberg's and Western's pricing practices, therefore overstates Stromberg's prices for all apparatus items actually sold by Western as parts of assembled substation units.

(3) The factors used to convert Stromberg's piece-part prices to the price level of apparatus sold as parts of switchboards include allowances for assembly, wiring and labor, whereas the allegedly comparable Western prices include the apparatus only. The effect is to compare Stromberg's prices, including assembly, labor and wiring, with Western's prices for material only. The prices actually charged by both Western and Stromberg for apparatus sold as assembled units include charges for assembling, wiring and testing. Had Stromberg's prices been put on a basis comparable to Western's in this respect, the estimate of Stromberg's prices for complete switchboards would have been reduced about 4 percent.

(4) In converting Stromberg's piece-part prices to those applicable to switchboard sales the American Co. combined two mutually inconsistent methods of weighting in the same computation, the first in converting Stromberg's piece-part prices to prices of complete switchboards, the second in converting Western's sales of apparatus sold as assembled units to the price Stromberg would have charged for such sales. As a basis for the first conversion of Stromberg's prices, the American Co. used three factors applicable to manufactured equipment, switchboard cable, and items purchased by Stromberg for resale, respectively. The factor for apparatus and equipment pur-

ports to represent the ratio of Stromberg's price for the most important circuits in all Bell System manual switchboards having in general 4,000 multiples or less,⁴³ if sold as piece parts to the corresponding price if sold as additions to existing switchboards and as new switchboards. For switchboard cable a similar computation was made based upon a portion of Stromberg's sales. For items either purchased for resale or not sold by Stromberg 10 percent was added as a jobbing mark-up.⁴⁴ In the second step, that of converting Western's sales of apparatus sold as assembled units to Stromberg's price level, the American Co. disregarded the typical switchboard and used all Western items sold as parts of assembled switchboard units of all sizes in 1934. Western's sales were converted first to Stromberg's piece-part prices by pricing comparable items in each class and then applying the ratio of Stromberg's to Western's prices so found to the complete class of products. The total thus determined, which allegedly represented Stromberg's piece-part price for Western's 1934 sales, was converted to Stromberg's alleged price for new switchboards by application of the ratios derived from pricing small Bell System switchboards and a portion of Stromberg's switchboard-cable sales. The results of these computations appeared to indicate that Stromberg's prices for new switchboards and for additions to existing switchboards amounted to 104 percent and 127 percent, respectively, of Western's prices charged for similar sales. Many of the Western items to which price ratios were applied had no Stromberg equivalent. For comparable items the quantities sold by Western had no relation to the quantities in the typical switchboard from which the Stromberg ratios of unassembled to assembled prices were derived. The method used by the American Co. may be compared to deriving a sales discount ratio for Lincoln automobile sales and applying it to the year's sales of Chevrolets priced at Ford prices for comparison with prices of all General Motors' cars.

A straightforward comparison of Stromberg's and Western's prices for equipment sold as new switchboards can be made directly for 80 percent of the equipment included in the American Co. pricing of Bell System small manual switchboards. This comparison indicates Stromberg's prices to be 18 percent below Western's. If functionally comparable circuits are priced in the same way, the results indicate Stromberg's prices to be 21 percent below Western's. These differences in favor of Stromberg exceed somewhat those set forth in table 52 for a slightly different switchboard at a different pricing date.

⁴³ These switchboards cover the range of switchboard sizes generally sold by independent manufacturers.
⁴⁴ The results indicated by these computations were as follows:

	Items either pur- chased for resale or not sold by Strom- berg	Switch- board cable	Apparatus and equip- ment
	Percent	Percent	Percent
Piece-part prices.....	100	100	100
Prices for additions to switchboards.....	110	94	81
Prices for new switchboards.....	110	77	66

The relationship of Stromberg's piece-part prices and prices for new switchboards indicated by this computation corresponds with the figures of 72 percent derived from table 50. The difference between the two figures is explained largely by difference in average time in effect prices for 1934 used by the American Co. and Jan. 1, 1936, prices used in compiling the results set forth in table 50.

For new switchboards and additions to existing switchboards combined in the proportions sold by Western in 1934 the American Co. computations indicated Stromberg's prices to be 109 percent of Western's whereas a straightforward price comparison based upon the small Bell System switchboards and Stromberg's sales of switchboard cable showed Stromberg's prices to be 94 percent of Western's for comparable apparatus and 91 percent of Western's prices for functionally comparable circuits.

The American Co.'s studies of step-by-step equipment purport to make comparisons of prices charged by the Automatic Electric Co. and the Western for a portion of the apparatus and equipment used in step-by-step central-office installations. Automatic prices used are list prices less discounts. The discounts are represented by the American Co. to be maximum reductions allowed by the Automatic Electric Co. to its preferred customers on sales of central offices. Mr. Benoist, vice president and general manager of the Automatic Electric Co., has advised the Federal Communications Commission ⁴⁶ that the prices used by the American Co. are not those actually charged by the Automatic Electric Co. and, in fact, Automatic Electric Co. has not established firm prices for assembled step-by-step central-office equipment. This statement was checked by comparing Automatic Electric Co.'s price lists with its proposals on a number of jobs and it was found that the discounts allowed from list prices varied widely. For instance, the Automatic Electric Co.'s records on the Fort Sam Houston and Randolph Field step-by-step central-office equipment sales to the United States Government in 1931 show that list prices were discounted 67 percent for the Randolph Field equipment and 72 percent for the Fort Sam Houston equipment. ⁴⁶ In compiling the price comparison study of step-by-step equipment for 1931 the American Co. reduced Automatic's list prices by only 50 percent, which is claimed by the American Co. to have been the maximum discount allowed during that year. ⁴⁷ In view of these facts, it is considered impossible to obtain a reasonable comparison of Automatic Electric Co. and Western prices for step-by-step central-office equipment except by computing Western's price for installations actually sold by the Automatic Electric Co., or by comparing Western's and Automatic's bids for equivalent equipment. Since the discounts allowed by the Automatic Co. vary materially for different sales it would be necessary to compile such studies for a number of installations in order to determine the correct relationship between Automatic's and Western's price for step-by-step equipment sold in assembled form.

The American Co.'s studies of lead-covered cable include comparisons of Graybar's and independent suppliers' prices with Western's prices for Graybar's sales and a portion of the independent suppliers' sales. Graybar's and the independent suppliers' prices are those reported to the American Co. as having been charged for specific sales of lead-covered cable and Western's are average time in effect prices during the year for which the study is made, for corresponding amounts of cable. Of the total sales to the general trade considered

⁴⁶ See Engineering Binder No. 134, contained in the Federal Communications Commission files.

⁴⁶ Automatic sale price for material only amounted to 95 percent of Western's bid price, but the American Co.'s price comparison study for the year in which the sale was made showed Automatic's prices to its most favored customers to amount to 129 percent of Western's prices to associated companies.

⁴⁷ See Engineering Binder No. 184, contained in the Federal Communications Commission files.

by the American Co. in its 1934 and 1935 lead-covered-cable price comparison studies, 72 percent and 65 percent, respectively, were Graybar sales. Since the American Co. estimates that Graybar makes only approximately 50 percent of the sales to the general trade, the American Co.'s studies do not reflect the level of prices actually paid for lead-covered cable by the general trade. Graybar's prices are Western's prices plus a jobbing mark-up. Because of the heavy weighting accorded Graybar's sales, the differences between Western's prices and the general trade prices, as shown by the American Co. price comparison studies, are accounted for largely by Graybar's jobbing mark-up.

The American Co.'s studies of prices for materials purchased by Western for resale to Bell companies involve comparisons of Western's prices with prices of the Graybar and Automatic Electric Cos. for selected outside plant material items. With few exceptions, these studies indicate that Western's prices are materially lower than those of the independent suppliers. Graybar and Automatic as well as Western purchase these material items from other suppliers for resale to their customers, consequently the difference between Western's and the two independent suppliers' sale prices reflect the price paid to the producer plus a jobbing mark-up added by the three companies.

Prior to June 2, 1930, Western's selling prices for such supplies were based upon its costs plus certain fixed amounts for its services including administration, warehousing, inspection, etc. From September 1, 1929, to June 2, 1930, the amounts added by Western to its costs ranged from 10.5 to 2.5 percent, depending upon the type of material and whether it was shipped from distributing houses or directly from the supplier. As of June 2, 1930, Western established firm prices which were based upon its costs plus amounts approximately equal to the service charges added to warehouse shipments during the period September 1, 1929, to June 2, 1930. The amounts added during the period of firm prices have varied materially, and for the greater part of the time have generally exceeded the amounts originally added.⁴⁸

According to the American Co.'s thesis Western's prices are reasonable if they are as low or lower than the Bell companies would have to pay if supplies were purchased directly from other manufacturers and suppliers. This question involves consideration of the cost to the Bell companies of furnishing the services now performed by Western and the comparative purchasing power of the individual Bell companies and the Western Electric Co. No information is available as to the costs which the Bell companies would incur in operating individual supply departments as compared with Western's charges for performing such services. However, with respect to the purchasing power of Western, studies made by the investigation engineers show that Western Union Telegraph Co. and Western Electric Co. purchase many comparable material items and in general the prices paid by Western Union do not exceed those paid by Western. Some indication of the comparative volume of purchases made by Western Electric Co. and Western Union Co. can be had from a comparison of Western Union's investment in plant and equipment with those of Bell companies. These data show that the investment of Western Union amounts to less than 10 percent of the Bell com-

⁴⁸ As much as 50 to 70 percent has been added to certain items for a short period of time.

panies, is less than half of that of the New York Telephone Co. or is less than the investments of either the long lines or Southern Bell Telephone & Telegraph Co.

The American Co. studies of all purchases of apparatus and lead-covered cable by particular associated companies involve identically the same kind of comparisons as are made for unassembled apparatus and lead-covered cable previously discussed and are subject to the same criticisms.

Federal Communications Commission Price Comparisons.

Investigation engineers made several studies of comparative prices charged by Western and the independents on bases differing from those used by the American Co. in its studies. These studies compare prices charged by Western and independent suppliers for assembled equipment including private-branch-exchange equipment, magneto and common battery manual and step-by-step central-office equipment. These studies are subject to many of the same infirmities previously described as applying to the studies made by the American Co. However, for assembled apparatus included in these studies, which is representative of a substantial portion of telephone-equipment sales, it is indicated that Western's current (1936) prices are generally higher than those of independent suppliers for comparable equipment items.

The investigation engineers compared Western's prices for small cord nonmultiple PBX switchboards arranged for connections to both manual or dial central offices, with Kellogg's and Automatic's prices for PBX boards similarly arranged. These comparisons using prices as of January 1, 1936, indicated Kellogg's and Automatic's prices for PBX boards arranged for connections to both manual and dial central offices amounted to 103 percent and 100 percent, respectively, of Western's price. The investigation engineers also made comparisons of Kellogg's prices for PBX boards, arranged for connections to manual or dial offices only, with Western's prices for small PBX boards which are standardized for use in either manual or dial office areas. This study showed that Kellogg's prices for boards used in manual areas were 83 percent of Western's prices and for boards used in dial areas, were 87 percent of Western's.

A comparison of sale prices for magneto nonmultiple switchboards, which represent a relatively important part of both Kellogg's and Stromberg's sales, shows that the Kellogg Co.'s prices, as of January 1, 1936, amounted to 81 percent of the prices charged the associated companies by Western for comparable equipment as of the same date. Price comparisons of this nature have not been included as a part of the American Co.'s routine studies to determine the reasonableness of Western's prices. However, such comparisons were included in the American Co.'s comments on exhibit 292, which indicated that, except for the years 1925 and 1929, Kellogg's prices for magneto equipment have been lower than Western's during the entire period 1923 to 1936, inclusive.⁴⁹

The prices used by the American Co. in making this comparison are summarized in table 51.

⁴⁹ American Telephone & Telegraph Co. comments on exhibit 292, p. 58.

TABLE 51.—Comparison of Western and Kellogg prices for Western's shipments of magneto switchboard equipment, years 1923 to 1936, inclusive

[Price per section]

Year	Western	Kellogg	Percent Kellogg's price of Western's price	Year	Western	Kellogg	Percent Kellogg's price of Western's price
1923.....	\$718.60	\$697.70	97	1930.....	\$749.05	\$725.70	97
1924.....	715.64	711.55	99	1931.....	915.74	725.70	79
1925.....	694.51	726.53	105	1932.....	921.86	725.71	79
1926.....	790.68	724.03	92	1933.....	922.33	725.67	79
1927.....	763.49	720.65	94	1934.....	1,010.00	725.75	72
1928.....	741.05	724.70	98	1935.....	1,002.63	725.75	72
1929.....	712.77	725.70	102	1936.....	894.30	725.70	81

The American Co. weighted the prices shown in the above tabulation according to Western's shipments, which exceeded 150 sections during the period 1923-27, and amounted to 10 or less each year from 1932 to 1936, inclusive. This computation indicates that Kellogg's average prices amounted to 97 percent of Western's. However, if the prices had been weighted by the time they were in effect, which is the method used by the American Co. in all of its price comparison studies used in rate cases, Kellogg's prices would have been shown to average 89 percent of Western's prices during the entire period.

Special investigation engineers have presented two types of price comparisons of complete central-office switchboards: First, price comparisons made by Bell System engineers in connection with actual central office installations, and second, comparisons made by special investigation engineers of actual and estimated prices for existing equipment in several Bell and independent exchanges. The first group consists of price comparisons supplied by the American Telephone & Telegraph Co. from its files, in which Bell engineers have compared independents' and Western's actual bid and sale prices with bids and estimates of what Western and independents would have charged for equivalent quantities of equipment. These price comparisons are set forth in table 52.

TABLE 52.—Bell System engineers' comparisons of Western Electric prices with those of independent manufacturers for complete central office switchboards as of the date of sale

MANUAL, COMMON BATTERY SWITCHBOARDS, EXCLUDING COST OF INSTALLATION

Exchange	Date	Western price		Kellogg price		Stromberg price	
		Source	Amount	Source	Amount	Source	Amount
Jacksonville, Tex.....	1922	(¹)	\$14,894			(¹)	\$14,752
McMinnville, Tenn.....	1924	(¹)	9,685	(¹)	\$8,700		
Mendon, Tex.....	1926	(¹)	12,680	(¹)	14,000	(¹)	13,863
McAllen, Tex.....	1926	(¹)	17,661	(¹)	20,216	(¹)	19,109
Harrisonville, Mo. ¹	1928	(¹)	14,925	(¹)	11,932	(¹)	11,654
Do. ¹	1928	(¹)	17,550	(¹)	12,427	(¹)	12,952
Total Western-Kellogg comparisons.....			72,501		67,275		
Total Western-Stromberg comparisons.....			77,710				72,330
Percentage independent's price of Western's price.....			100		93		93

¹ Sale price.² Bell engineers' estimate of Western's price for equivalent equipment.³ Bid price.⁴ Manual ringing equipment.⁵ Machine ringing equipment.

TABLE 52.—Bell System engineers' comparisons of Western Electric prices with those of independent manufacturers for complete central office switchboards as of the date of sale—Continued

STEP-BY-STEP AUTOMATIC SWITCHBOARDS, INCLUDING COST OF INSTALLATION

Exchange	Date	Western price		Automatic Electric Co. price	
		Source	Amount	Source	Amount
Carthage, Mo.	1923	(¹)	\$98, 043	(¹)	\$92, 816
Manhattan, Kans.	1923	(²)	82, 309	(³)	78, 503
Wichita Falls, Tex.	1921	(¹)	362, 920	(³)	335, 006
Total Western-Automatic comparison			543, 272		496, 324
Percentage independents' price of Western's price			100		91.5

¹ Sale price.

² Bell engineers' estimate of Western's price for equivalent equipment.

³ Bid price additional costs which Bell engineers estimated would be incurred to make installation meet Bell standards.

⁴ Automatic Co. estimate made at the request of Bell engineers.

The table shows independents' prices to have been, on the whole, some 7 or 8 percent below Western's prices. The range of years covered is 1921 to 1928.

It will be noted that the Jacksonville, Tex., sale was made by the Stromberg Co. in 1922, which was 3 years before Western began supplying a comparable type of switchboard. Western's price is therefore theoretical only, since it was necessary for the Bell engineers to convert 1925 prices to price levels in 1922, at which time no Western prices for such equipment existed. Also, the McMinnville, Tenn., estimate in 1924 and Western bids on Mission and McAllen, Tex., in 1926 were made before Western had established firm prices, or was on a production basis, on its No. 11 switchboard, the type comparable to the equipment supplied by the independent manufacturer. The Harrisonville estimate in 1928 was made after firm (Western Electric) prices on the No. 11 switchboard had been established and published for Bell System use. The telephone company at Harrisonville obtained two bids from each of the suppliers,⁵⁰ on a manual ringing and one on a machine ringing switchboard. Both have been included in the table. The independent companies' standard product was the machine ringing board. In cases where several estimates were made by Bell engineers for the same switchboard, the result most favorable to Western has been reproduced in the table.

The second group of price studies consists of comparisons of actual sale and bid prices of Western and independents with estimated prices of independents and Western for equivalent quantities of equipment. The results have been set forth in table 53. Prices used for manual equipment are those of January 1, 1936, or have been converted to that level by means of index numbers, or price trends supplied by the American Telephone & Telegraph Co. and by the independent manufacturers. The step-by-step automatic-equipment price comparisons are as of the date of bids or 1931.

⁵⁰ Table 52 presents Western's prices to associated companies for the equipment, which are somewhat less in amount than Western's actual bids which were made through Graybar.

TABLE 53.—*Special-investigation engineers' comparisons of Western Electric prices with those of independent manufacturers for complete central office switchboards*

[Estimated 1936 prices]

COMPARISONS WITH KELLOGG FOR MANUAL, COMMON BATTERY SWITCHBOARD—
PRICES AS OF JAN. 1, 1936

	Western Electric				Independent supplier			
	Notes	Material	Installation	Total	Notes	Material	Installation	Total
Newton, Iowa.....	(1)	\$36,910	\$6,440	\$43,350	(1)	\$30,404	\$3,500	\$33,904
Cape Girardeau, Mo.....	(1)	48,522	8,400	56,922	(1)	43,548	5,879	49,427
Greenwood, S. C.....	(1)	27,030	4,896	31,926	(1)	21,631	1,921	23,552
Mount Vernon, Ill.....	(1)	49,770	11,688	61,458	(1)	38,581	4,926	43,507
Vandalia, Ill.....	(1)	20,091	7,674	27,765	(1)	13,668	1,410	15,078
Total.....		182,323	39,098	221,421		147,832	17,636	165,468
Percentage independents' price of Western's price.....		100	100	100		81	45	75

COMPARISONS WITH STROMBERG FOR MANUAL, COMMON BATTERY SWITCH-
BOARD PRICES AS OF JAN. 1, 1936

Newton, Iowa.....	(1)	\$36,910	\$6,440	\$43,350	(1)	\$31,716	\$3,768	\$35,484
Cape Girardeau, Mo.....	(1)	48,522	8,400	56,922	(1)	46,417	5,099	51,516
Greenwood, S. C.....	(1)	27,030	4,896	31,926	(1)	23,945	2,967	26,912
Mount Vernon, Ill.....	(1)	49,770	11,688	61,458	(1)	41,183	5,153	46,336
Vandalia, Ill.....	(1)	20,091	7,674	27,765	(1)	14,644	1,611	16,255
Total.....		182,323	39,098	221,421		157,905	18,582	176,487
Percentage independents' price of Western's price.....		100	100	100		87	48	80

COMPARISONS WITH AUTOMATIC ELECTRIC CO. FOR STEP-BY-STEP AUTOMATIC
SWITCHBOARD PRICES AS OF FEBRUARY 1931

Randolph Field and Fort Sam Houston, San Antonio, Tex.....	(1)	\$104,537	\$23,205	\$127,742	(1)	\$99,776	\$15,001	\$114,777
Percent of Western's price.....		100	100	100		95	65	90
Grand-total.....		400,183	101,401	570,584		406,513	51,219	496,732
Percentage independent's price of Western's price.....		100	100	100		86	51	80

1 Sale price.

2 Bid price.

3 Kellogg Co. estimate checked by special-investigation engineers.

4 Estimate by special-investigation engineers.

5 Price estimate prepared by special-investigation engineers checked by Stromberg Co.

The results shown on table 53 indicate Kellogg's prices for these switchboards would have been 75 percent of Western's; Stromberg's 80 percent of Western's; and Automatic Electric's 90 percent of Western's. For material only, the above percentages are 81 percent, 87 and 95 percent, respectively. On manual switchboards independents do more wiring and assembly work in the factory and less in the field than does Western.

If the results shown by tables 52 and 53 are to be compared, differences in the times to which the prices apply must be considered. Western made effective large price increases between 1929 and 1936, whereas Stromberg's prices are reported to have increased only slightly and Kellogg's not at all during that period. The effect is indicated by converting that part of the equipment listed in table 52 for which price indexes are available to the January 1, 1936, price

level for each of the three companies. The result is reported by the engineers as follows:

Exchange	Original bid date	Switchboard material price as of Jan. 1, 1936		
		Western	Kellogg	Stromberg
Mission, Tex.....	1926	\$14,460	\$14,000	\$14,160
McAllen, Tex.....	1926	20,120	20,216	19,500
Harrisonville, Mo. (machine ringing).....	1928	22,450	12,427	13,750
Harrisonville, Mo. (manual ringing).....	1928	19,100	11,932	12,390
Total.....		76,130	58,575	59,790
Percentage, independents' price of Western's price.....		100	77	79

The American Telephone & Telegraph Co. in its brief has made several criticisms of the special investigation engineers' reports on the subject of price comparisons. Many of these criticisms, such as insufficiency and nonrepresentativeness of the sample compared, lack of fixed independent prices, and different basis for sales, etc., appear to apply also to the American Telephone & Telegraph Co. price-comparison exhibits introduced in associated company rate cases, and appear to present difficulties inherent and unavoidable in any attempts to compare the general level of Western's prices with that of independent suppliers. The special investigation engineers have not claimed any such broad comparison. The American Telephone & Telegraph Co. now claims the price studies made by Bell System engineers at the time of installation of the equipment, included in table 52, to be incorrect.⁶¹ No support has been offered for this contention. The company has offered its own estimates of Western and independent prices for the Newton, Iowa, and Cape Girardeau, Mo., equipment included in table 53. These company estimates are as of the date of the sale, which was 1927 for Newton and 1929 for Cape Girardeau, and indicate the independents' prices to be 107 percent and 129 percent of Western's, respectively.⁶² Special investigation engineers have reported that when the prices are converted to the January 1, 1936, price level used in table 53, the percentage relation of independents' price to Western's becomes 87 percent for Newton and 97.8 percent for Cape Girardeau, figures which are reasonably consistent with those given in table 53 for the same exchanges.

In the comments on exhibit 292 the American Co. also has submitted comparisons of Kellogg's and Stromberg's central office equipment sale prices with Western's prices for No. 12 switchboards, which are alleged to be equivalent. The comparisons involve five recent central office sales, three of which were made by Kellogg and two by Stromberg. The study shows that the independent suppliers' sale prices ranged from 127.4 to 156.3 percent of Western's price for equivalent quantities. No information regarding the two Stromberg sales is available, but with respect to the three Kellogg sales, the special telephone investigation files disclose that Masterbuilt feature switchboards were supplied. This type of board is considered by special investigation engineers to be comparable to Western's No. 11 board, which includes much more equipment and better operating charac-

⁶¹ Brief of Bell System companies, p. 124.

⁶² Ibid.

teristics than the No. 12 board. Western's prices for No. 11 boards are more than three times that of the No. 12 boards, as indicated by an Illinois Bell cost estimate, wherein for a small exchange the price of a No. 11 manual ringing board was \$52 per station and for a No. 12 board \$16 per station.

Any comparison which might be attempted would be subject to some criticism, since it is extremely difficult to compare, structurally and functionally, complicated equipment such as a telephone switchboard, of two different manufacturers. The assembled equipment comparison is informative, however, if for no other purpose than to indicate that the American Co.'s price-comparison studies are not convincing as to the reasonableness of Western's prices to the associated companies.

Summary.

Western Electric Co., as the manufacturing department of the Bell System, has had exclusive access to the huge market provided by the Bell System operating companies for telephone apparatus and equipment. The investment of the associated Bell Telephone companies in telephone plant and equipment represents approximately 90 percent of the total book cost of telephone plant in the United States. A substantial part of this investment is represented by apparatus, equipment, and supplies purchased from Western and, therefore, the cost of furnishing telephone service is influenced to an appreciable extent by Western's prices. In rate proceedings the operating companies consider Western's current prices to be the basic factor in establishing the fair value of a substantial part of the property used in furnishing telephone service. As set forth in section 5 of chapter 18, Western's earnings, as reflected in its books of account, have been related to the gross and net book cost of its assets, and the recorded profits have been related to paid-in capital (cash paid into the company's treasury by the common stockholders) and to common-stock holders' equity, as shown by the books. No attempt was made to determine the reasonableness of Western's profits over the period of its existence by giving recognition to the remaining value of that company's assets. Neither was any investigation made of the efficiency of Western's manufacturing operations. The investigation staff did make various studies of Western's cost accounting and pricing practices and their relation to the reasonableness of telephone rates from the standpoint of the individual operating companies or communities as of specific dates or for specific periods.

Cost accounting performed by Western is designed to spread all costs incurred during a particular year over the production of that year, regardless of the nature of the costs and their relation to the production for the year. The material cost included by Western in the unit cost for any particular product is not the actual cost of such material, but is the standard cost of such material adjusted by a variation factor which is based upon the variation in a great many materials not related to the individual product for which the cost is computed. A substantial part of the manufacturing overhead expenses in any year may be incurred in connection with plant then idle that has contributed nothing toward the goods produced. Inclusion of such overhead in current cost of manufacture is contrary to the procedure generally

recommended and outlined by the National Electrical Manufacturers' Association, of which Western is a member. The differences between standard cost and current expenditures for the accounting period are allocated to individual products through the application of over-all variation percentages for large general classes of products. Such a variation, representing the average for many products, may have no particular significance in connection with an individual product to which it may be applied. Western's sales for a particular period are determined from billings to customers, and the cost of sales is determined in accordance with the same methods adopted in computing the cost of an individual product. As a result of improperly treating some costs as part of manufacturing expense applicable to current production, and because of the loose method followed in allocating variations between standard and actual costs, Western's computed costs for individual products do not provide an authentic basis for testing the reasonableness of the prices for these products, nor do its over-all profits from sales provide any better basis for testing the reasonableness of its prices for all products. A comparison of prices charged by Western with its estimated complete costs shows such wide variations as to indicate that no attempt is made to relate such prices to such costs on any consistent basis.

If Western's costs for the year 1936 were computed in accordance with principles considered sound by special-investigation engineers, the average costs per unit of production would be much lower than Western's estimated current complete costs for the same period, and would afford, in their opinion, a better basis from which to arrive at a selling price which would be reasonable, having in mind the facts (1) that the exchange rates in a single community may be the only issue in a rate proceeding; (2) that the composition of telephone plant as between different communities varies widely; (3) that the dates of installation of the remaining useful property varies widely as between different exchanges and communities. Western's cost-accounting methods are bound to produce relatively high costs in periods of low production, as compared with relatively low costs in periods of high production, and while this may not affect the reasonableness of the investment in Bell System plant as a whole, this fact, together with the methods of allocating the differences between standard and current costs by use of over-all variations, and lack of relationship between estimated cost and price may have a very decided effect upon the investment in any individual exchange or by an operating company in its entire plant. Reproduction cost estimates would, of course, vary widely from year to year if based on Western's costs for any particular year.

Comparisons made by the Bell System between prices charged by Western and by independents for comparable telephone equipment are on the basis of the quoted prices for individual piece parts. Comparisons made by investigation engineers which give consideration to the fact that independents' prices for assembled equipment are lower than the combined prices for their constituent piece parts give different results. Comparisons made by special investigation engineers between actual and estimated bid prices by Western and independents for complete switchboards also are greatly at variance with the results of the American Co.'s piece part comparisons.

The differences in manufacturing and marketing conditions between Western and the independent manufacturers are such as to make a comparison of their respective prices of little value in testing the reasonableness of Western's prices. Some of these differences are: (1) The size of the market supplied by Western as compared with that supplied by the independents; (2) the advance information available to Western as to the anticipated purchases by its customers, as compared with lack of such information available to the independent manufacturers; (3) the cost of selling products of the independent companies as compared with the fact that no sales cost is incurred by Western; (4) the relative credit risks of the independent manufacturers and Western.

CHAPTER 11

DEPRECIATION

Of all the subjects of controversy in telephone-rate proceedings during the last 15 or more years, that of depreciation has been the most bitterly fought and has attracted the widest attention. In recent years, the Bell Telephone System has charged to operating expenses and credited to depreciation reserves approximately \$165,000,000 annually to cover its estimate of depreciation in the property during the year.¹ In many rate cases the variation in results obtained by different methods advocated by companies and the representatives of the public for determination of annual and accrued depreciation has resulted in enough difference in the net earnings and rate of return to decide the case without consideration of other elements.²

Depreciation has been defined as follows:

Broadly speaking, depreciation is the loss, not restored by current maintenance, which is due to all the factors causing the ultimate retirement of the property. These factors embrace wear and tear, decay, inadequacy, and obsolescence. Annual depreciation is the loss which takes place in a year. In determining reasonable rates for supplying public service, it is proper to include in the operating expenses, that is, in the cost of producing the service, an allowance for consumption of capital in order to maintain the integrity of the investment in the service rendered. The amount necessary to be provided annually for this purpose is the subject of estimate and computation. * * *

All definitions of depreciation included in circulars or accounting systems of the Interstate Commerce Commission and the Federal Communications Commission state in effect that annual depreciation charges shall be included in operating expenses and concurrently credited to reserves for accrued depreciation to the end that by the time the depreciable units of property go out of service, there shall have been accumulated a reserve equal to the original money cost of such property less the salvage recovered. The definitions of depreciation which were established by the Interstate Commerce Commission in its 1913 uniform system of accounts for telephone companies, and which have since been largely reaffirmed in later systems of accounts, both by the Interstate Commerce Commission and the Federal Communications Commission, are based upon the concept that depreciation represents loss of value measured by consumption of units of service available initially or exhaustion of service capacity. This exhaustion of service capacity is assumed for accounting purposes to be proportional to time or evenly distributed over the probable life of each plant unit. Variations in the rate of depreciation are caused by changes in the probable length of service life and recoverable

¹ The average for the associated companies and the long lines department for the years 1935 to 1937, inclusive, was \$166,286,145.

² "Charges to operating expenses may be as important as valuations of property. Thus, excessive charges of \$1,500,000 to operating expenses would be the equivalent of 6 percent on \$25,000,000 in a rate base."—Chief Justice Hughes in *Lindheimer v. Illinois Bell Telephone Co.*, 292 U. S. 151, 164, 167.

³ Chief Justice Hughes in *Lindheimer v. Illinois Telephone Co.*, 292 U. S. 151, 167.

salvage which are, in turn, the result of changing conditions under which the property operates.

History of the American Telephone & Telegraph Co.'s Depreciation Practices.

From the early days of Bell System history the American Bell Co. and subsequently the American Co., has exercised supervision and control over the accounts and bookkeeping methods of the licensee companies. Officials of the parent company realized that the continuing prosperity of the system and of subsidiaries which they controlled was dependent to a large extent upon systematic provision out of earnings of amounts sufficient to cover the replacement of parts of the properties as they became worn out or superseded by later inventions. The reservation from earnings in the early days took the form of a maintenance reserve set up for the purpose of equalizing maintenance charges over a period of years and providing for deferred maintenance expenses. As expressed in a letter of the American Bell Co. in 1884, addressed to the licensees, it was certain that the current expense for repairs and reconstruction was not proportionate to the actual deterioration of property and that in future years the revenue of most companies would be subject to heavier charges on this account. It was, therefore, suggested that a reserve fund ⁴ be set aside to which should be carried such part of the annual profits as represented the estimated amount of yearly depreciation not covered by expenditures on account of repairs and reconstruction.

The idea of a separation between depreciation and maintenance expenses appears not to have become clearly formulated until about 1908. At that time the former simple plan of charging replacements and reconstruction costs to operating expenses and utilizing an equalizing reserve merely to smooth out violent fluctuations from year to year underwent a radical change. During the intervening years, the depreciation problem was the subject of much discussion and study, and it was concluded by the American Co. that a separate estimate and allowance should be made for accrued and accruing depreciation, as contrasted with the former practice of one estimate and allowance covering current maintenance and depreciation. The accounting circular issued on November 10, 1909, by the American Co. provided for a "replacement reserve" subdivided into 14 subaccounts pertaining to each principal class of plant and equipment. This reserve was intended to represent the accumulated and unexpended provision for future replacement or maintenance of the plant and other property. The language of accounting circulars at that time appears to have been modeled after that of the Supreme Court decision in *Knoxville v. Knoxville Water Co.*⁵

Before coming to the question of profits at all the company is entitled to earn a sufficient sum annually to provide not only for current repairs, but for making good the depreciation and replacing the parts of the property when they come to the end of their life.

The Interstate Commerce Commission's Uniform System of Accounts for Telephone Companies, effective January 1, 1913, issued under the authority conferred on it by the Mann-Elkins Act of 1910, gave

⁴ The word "fund" is here used in paraphrasing the contents of the circular letter of the American Bell Co. Apparently the creation of a separate depreciation fund was contemplated at that time; actually no such funds have been segregated by the Bell System companies, the amounts reserved for depreciation being merged with the companies' assets and used for corporate purposes.

⁵ 212 U. S. 1.

effect to the concept of the use of depreciation accounting for the purpose of an orderly measurement and periodical statement of the "expired outlay on productive plant."⁶ The application of this concept to accounting methods for telephone companies was first expressed by the Interstate Commerce Commission in Accounting Series Circular No. 30, issued November 15, 1911. The depreciation provisions of the first issue of the Uniform System of Accounts have undergone significant changes in subsequent issues, directed principally toward the practical application of this concept of depreciation accounting.

Results of the American Co.'s Depreciation Practices.

Examination of the financial reports furnished by the licensee companies to the parent company during the years 1883-1905 shows that up to about the year 1884 no substantial depreciation reserves had been accrued by the licensee companies. Between 1884 and 1905 the depreciation accounting practices prescribed by the American Co. were adopted to an increasing extent, but with variations in interpretation and application, which produced wide differences in the amounts of the reserves accrued by the various companies. The reports for the year 1905 show maintenance reserve balances ranging from debit balances of 6 percent of the telephone plant account up to credit balances of upward of 30 percent.

Explanation for the failure of many of the licensees to accrue substantial depreciation reserves during the early years of the business may be found in the obvious financial prudence of taking out as much profit as possible before the expiration of the basic telephone patents, rather than creating large reserves represented by assets invested in additional property. The latter policy might have led to losses if, at the end of the basic patent period, the company had been unable to continue to dominate the field against competition.

With the expiration of the basic Bell patents, the economic viewpoints of both the parent company and the licensee companies changed. After that time it became a question of obtaining the largest profit for the longest time under the conditions imposed by growing public regulation and competitive enterprises.

The combined balance sheets of the Bell System as at December 31, 1908, show the investment in plant and equipment as \$531,506,438 and the reserve for depreciation as \$17,818,995.⁷ The reserve amounted to 3.4 percent of the property. On December 31, 1911, the investment in plant and equipment was \$672,541,495 and the reserve for depreciation \$73,832,001, or 11 percent of the property. At the latter date, wide variations still existed between the reserves of the various associated companies, the range being from a negative reserve of 5.5 percent for the Missouri & Kansas Telephone Co. to a credit balance of 28.8 percent for the Providence Telephone Co.

A method of eliminating the differences between depreciation charges and reserves in the various licensee companies and of standardizing depreciation policies was discussed extensively by the American Co. in 1909. In 1909 Comptroller Du Bois, of the American Co., made the following suggestion to President Vail:⁸

Now my thought is to begin an advance toward proper allowance for depreciation but to proceed gradually so as not to disturb comparative earnings. In-

⁶ Interstate Commerce Commission Accounting Series Circular No. 13, July 29, 1907.

⁷ See exhibit 1364, schedule A-1, and exhibit 1360-B, schedule 2.

⁸ Exhibit 2089-A, p. 43, letter dated April 7, 1909.

stead of showing greatly increased earnings as above, I would show an increase in earnings about equivalent to the increase in capitalization and would hold the balance in reserve for depreciation.

The Uniform System of Accounts adopted by the Interstate Commerce Commission, effective January 1, 1913, provided accounts designed to permit the statement of the extent to which the original investment had been impaired through all causes which might lead to the ultimate retirement of the property⁹ and also suggested methods or determining annual depreciation charges, as follows:

The rate of depreciation should be fixed so as to *distribute, as nearly as may be, evenly throughout the life of the depreciating property the burden of repairs and the cost of capital consumed in operations during a given month or year, and should be based upon the average life of the units comprised in the respective classes of property.* [Italics supplied.]

Beginning with January 1, 1913, the depreciation practices developed by the American Co. provided for the determination of an annual straight-line depreciation percentage derived from an estimated average service life, salvage, and cost of removal, and applied to the book cost of the depreciable property as a basis for subsequent depreciation charges. The result of the American Co.'s interpretation of what was permitted under the provisions of the 1913 system of accounts relating to depreciation is shown in the history of the depreciation reserves from 1913 to 1936, as set forth in table 54, page 329. As of December 31, 1913, the reserve amounted to 14.18 percent of the total depreciable telephone plant. As of December 31, 1936, this percentage had increased to 28.35 percent.

In 1913 the entire operations of the associated companies were on a manual magneto and manual common battery basis with the minor exception of a few step-by-step automatic plants purchased from independent companies. During the intervening 23 years to 1936, a very substantial portion of the property had been replaced by more costly automatic equipment of various types. Many new buildings, main conduit routes, and cables adequate to supply service for many years in the future were constructed. The plant grew from an investment of less than \$800,000,000 in 1913 to over \$4,000,000,000 in 1935, during which time the depreciation reserves increased from approximately \$100,000,000 to over \$1,000,000,000. It is possible to conclude from the above facts that reserves may have been accrued too rapidly for a plant of the age, composition, and growth of the Bell System. At the end of 1935 some of the variations between companies with respect to the ratio of depreciation reserves to investment in depreciable telephone plant, which was apparent in 1911, had been reduced, the status in 1935 being as shown in table 55, page 330.

⁹ These causes had been stated previously in Interstate Commerce Commission Accounting Series Circular No. 30, p. 44, par. 1, issued November 15, 1911, to accounting officers of telephone companies. This circular contained a tentative uniform system of accounts for telephone companies.

Operating revenues of the Bell System companies from 1913 to 1935 totaled \$14,922,818,490. Of this amount, \$2,634,658,204, or 17.66 percent, was earmarked as depreciation expense either as charges to operation or against surplus and supplemented by \$83,303,654 absorbed into the expense or fixed asset accounts through the depreciation of general equipment charged to clearing accounts, making a total of \$2,717,961,858. Of this total, \$1,666,814,129 (10.72 percent of the operating revenue, after adjusting for general equipment) was used for writing off an investment of \$2,813,389,563 in removed or abandoned plant after allowing for resultant salvage, leaving a remainder of \$1,051,147,729 (6.94 percent of operating revenue, after adjusting for general equipment) to be used in the future. The balance of operating revenues available for interest, dividends, and surplus, after making the above provisions and deducting other operating expenses, was \$3,505,293,211, or 23.5 percent of the operating revenues. The above figures with reference to plant removed or abandoned are particularly interesting in view of the relationship between the associated companies, the Western Electric Co., and the American Co. Practically all equipment and supplies obtained by the associated companies are purchased from Western Electric Co., which has shown profits on such sales, and such profits have inured to the benefit of the American Co. as owner of practically all of the stock of Western Electric Co.

TABLE 54.—*Depreciable telephone plant and depreciation reserve (1913-36)¹—Bell System in the United States*

At end of year	Total depreciable telephone plant ²	Reserve for depreciation ²	Percentage reserve	At end of year	Total depreciable telephone plant ²	Reserve for depreciation ²	Percentage reserve
(a)	(b)	(c)	(c ÷ b)	(a)	(b)	(c)	(c ÷ b)
1936.....	\$4,039,703,667	\$1,145,214,088	28.35	1924.....	\$2,109,282,966	\$485,662,088	23.02
1935.....	3,983,572,452	1,061,102,083	26.64	1923.....	1,816,791,472	443,130,438	24.39
1934.....	3,959,495,905	967,712,984	24.44	1922.....	1,583,989,292	395,297,455	24.96
1933.....	3,944,628,900	891,437,886	22.60	1921.....	1,425,453,966	350,642,044	24.60
1932.....	4,032,166,465	820,194,885	20.34	1920.....	1,268,996,643	309,556,404	24.39
1931.....	3,983,795,522	788,586,005	19.79	1919.....	1,152,803,664	276,304,281	23.97
1930.....	3,825,454,909	740,005,875	19.34	1918.....	1,079,141,408	235,395,350	21.81
1929.....	3,467,240,109	699,034,674	20.16	1917.....	1,001,974,606	201,089,953	20.07
1928.....	3,121,315,152	650,621,336	20.84	1916.....	894,290,659	168,043,687	18.79
1927.....	2,575,563,585	600,663,640	20.89	1915.....	839,377,256	142,307,226	16.95
1926.....	2,647,726,886	576,215,584	21.76	1914.....	805,256,465	122,337,597	15.19
1925.....	2,356,633,817	530,071,026	22.22	1913.....	755,390,070	107,080,543	14.18

¹ Source: American Co. annual reports of comptroller.

² In 1932 and prior years, column (b) includes total plant in service, plus general equipment, less land, station installations, and interior block wires. During these years, column (c) includes both reserve for depreciation and reserve for amortization of intangible capital, which latter reserve contains the reserve for right-of-way.

From 1933 to 1936, inclusive, column (b) includes all depreciable plant as classified by the Uniform System of Accounts. During these years, column (c) includes only the reserve for depreciation, since the right-of-way reserve is already included in the depreciation reserve.

TABLE 55.—*Percent depreciation reserve of depreciable telephone plant of each associated company at the end of 1935, Bell Telephone System in the United States*¹

Name of company:	Depreciation reserve, per- centage of depreciable plant, Dec. 31, 1935
New England Telephone & Telegraph Co.....	26. 97
The Southern New England Telephone Co.....	24. 47
New York Telephone Co.....	32. 63
New Jersey Bell Telephone Co.....	26. 01
The Bell Telephone Co. of Pennsylvania.....	22. 90
The Diamond State Telephone Co.....	19. 64
The Chesapeake & Potomac Telephone Co.....	27. 55
The Chesapeake & Potomac Telephone Co. of Baltimore City.....	26. 92
The Chesapeake & Potomac Telephone Co. of Virginia.....	18. 69
The Chesapeake & Potomac Telephone Co. of West Virginia.....	19. 96
Southern Bell Telephone & Telegraph Co.....	25. 28
The Ohio Bell Telephone Co.....	18. 48
The Cincinnati & Suburban Bell Telephone Co.....	32. 01
Michigan Bell Telephone Co.....	20. 89
Indiana Bell Telephone Co.....	14. 62
Wisconsin Telephone Co.....	35. 30
Illinois Bell Telephone Co.....	30. 53
Northwestern Bell Telephone Co.....	30. 60
Southwestern Bell Telephone Co.....	25. 28
The Mountain States Telephone & Telegraph Co.....	32. 43
The Pacific Telephone & Telegraph Co.....	26. 57
Total associated operating companies.....	27. 20
American Co. long lines.....	21. 94
Total Bell operating companies.....	26. 63
American Co., general.....	55. 97
Total Bell System.....	26. 64

¹ Source: The percentages in this table were taken from the American Co. comptroller's annual report for 1935, statement No. 41.

Present Depreciation Accounting Practices.

The present depreciation accounting practices to be followed by the Bell System companies are prescribed in the Federal Communications Commission Uniform System of Accounts for telephone companies by the following definitions and rules:

3. (J) "Depreciation," as applied to depreciable telephone plant, means the loss in service value (note instruction 3-Y) not restored by current maintenance, incurred in connection with the consumption or prospective retirement of telephone plant in the course of service from causes which are known to be in current operation, against which the company is not protected by insurance, and the effect of which can be forecast with a reasonable approach to accuracy. Among the causes to be given consideration are wear and tear, decay, action of the elements, inadequacy, obsolescence, changes in the art, changes in demand, and requirements of public authorities.

"Service value" is defined in section 3 (Y) as follows:

"Service value" means the difference between the original cost and:

- (1) The salvage value (note instruction 3-W) for station apparatus.
- (2) The net salvage value (note instruction 3-P) for other telephone plant.

The definition of "salvage value" is given in section 3 (W) as follows:

"Salvage value" means the amount received for property retired, if sold, or if retained for reuse, the amount at which the material recovered is chargeable to account 122, "Material and supplies."

The meaning of "net salvage value" is given in section 3 (P) as follows:

"Net salvage value" means the salvage value (note instruction 3-W) of the property retired after deducting the cost of removal.

The Commission's basic rules for depreciation accounting are stated in the Uniform System of Accounts as follows:

DEPRECIATION ACCOUNTING

80. *Computation of depreciation rates.*—(A) Depreciation charges shall be computed by applying the composite annual percentage rates considered applicable to the original cost (note instruction 3-S. 1) of each class of depreciable telephone plant owned or used by the company. (Note also instruction 81-B.) These percentage rates shall be based upon the estimated service values and service lives (note instruction 3-Y-X) developed by a study of the company's history and experience and such engineering and other information as may be available with respect to prospective future conditions. These percentage rates shall be computed in conformity with the group plan (note instruction 3-L) of accounting for depreciation and shall be such that the loss in service value of the property, except for losses excluded under the definition of depreciation (note instruction 3-J) may be distributed under the straight-line method (note instruction 3-Z) during the service life of the property. Such percentage rates shall not include any allowance for loss in service value of property expected to be installed in the future. The percentage rates shall, for each primary account comprised of more than one class of property, produce a charge to operating expenses for that account equal to the sum of the amounts that would otherwise be chargeable for each of the various classes of property included in the account.

(B) In the event any composite percentage rate becomes no longer applicable, revised composite percentage rates shall be computed in accordance with paragraph (A) of this instruction.

(C) The company shall keep such records of property and property retirements as will reflect the service life of property which has been retired, or will permit the determination of service life indications by mortality, turn-over, or other appropriate methods, and also such records as will reflect the percentage of salvage value, or net salvage value, as appropriate, for property retired from each class of depreciable plant.

81. *Depreciation charges.*—(A) Charges for currently accruing depreciation shall be made monthly to account 608, "Depreciation," and to clearing accounts, as appropriate, and corresponding credits shall be made to account 171, "Depreciation reserve." In computing the current monthly charges, one-twelfth of the composite annual percentage rate applicable to the primary accounts covering depreciable telephone plant shall be applied to the average of the balances, as of the first and last of the current month, in each such primary account.

(B) When the company is responsible under the terms of a lease for depreciation of property, used but not owned, for which the rent is chargeable to account 303, "Rent for lease of operating property," depreciation charges shall be made on the same basis as for owned depreciable property.

(C) A separate composite annual percentage rate for each account covering depreciable telephone plant shall be used in computing depreciation charges. Such composite rates shall be computed in accordance with instruction 80.

These instructions involve the definition of "original cost" given in section 3 (S. 1) as follows:

"Original cost" or "cost," as applied to telephone plant, franchises, patent rights, and right-of-way, means the actual money cost of (or the current money value of any consideration other than money exchanged for) property at the time when it was first dedicated to the public use, whether by the accounting company or by predecessors.

NOTE.—For the application of this definition to property acquired from predecessors see instruction 21. (Note also instruction 3-G. 1.)

The rules also involve the definition of "service life," for which reference is made to section 3 (X), as follows:

"Service life" means the period between the time of installation (note instruction 3-CC) of telephone plant and the time of its retirement.

and the "straight-line method," for which instructions are given in section 3 (Z), as follows:

"Straight-line method," as applied to depreciation accounting, means the plan under which the service value (note instruction 3-Y) of property is charged

to operating expenses and to clearing accounts and credited to the depreciation reserve through equal annual charges as nearly as may be during its service life.

The American Telephone & Telegraph Co.'s rule for determining the annual straight-line depreciation charge has been to apply to the book cost of each class of plant an annual depreciation rate equal to the difference between 100 percent and the percent of net salvage divided by the average life. This rule is applied according to two different plans: (1) Each major unit of plant is considered as a separate entity and depreciated on the basis of its own individual estimated average service life and salvage; (2) groups of similar plant units are considered together and depreciated according to the above rule on the basis of the estimated group average life and the estimated group average salvage. The Bell System companies establish unit rates for large individualized structures, such as buildings and central offices, which are not dependent directly upon other units for the termination of their service lives. In effect the annual depreciation charge is determined separately for each such unit, and the charges are then added together to determine the total depreciation charge for buildings and for central office equipment for the company as a whole. The total annual depreciation charge divided by the corresponding book cost of property determines the annual depreciation rate for plant falling within these classes.

Group or average rates of depreciation are established by the Bell System companies for continuous structures, such as pole lines, wire, cable, and underground conduit, and the classes of plant consisting of large number of similar units, such as subscribers' station apparatus, private branch exchanges, and motor and work equipment. These classes of plant lend themselves well to statistical analysis by actuarial methods whereby the average service lives indicated by the mortality experience of the plant may be determined and used as one of the guides for estimates of future life expectancies.

The depreciation reserve, as carried on a telephone company's books, is the accumulation of depreciation charges on the past and presently existing plant, less deductions on account of plant retired, further modified by the effect of purchases, sales, and transfers of depreciable property.¹⁰ The credits to the depreciation reserve account are to be made in accordance with instruction No. 81 of the Federal Communications Commission's Uniform System of Accounts for Telephone Companies, which requires the following:

Charges for currently accruing depreciation shall be made monthly to account 608, "Depreciation," and to clearing accounts, as appropriate, and corresponding credits shall be made to account 171, "Depreciation reserve."

The charges to the depreciation reserve are to be made in accordance with instruction No. 83 of the Federal Communications Commission's Uniform System of Accounts for Telephone Companies, which required that:

The service value of depreciable telephone plant retired (note also instruction 25) shall be charged in its entirety to account 171, "Depreciation reserve."

Under ideal conditions, where the original estimate of service life and salvage are perfectly accurate and there is no change during the life of the unit or property involved which makes necessary a revision

¹⁰ When depreciable property is retired from service, the amount at which it stands charged to the accounts should be deducted. If such deductions are incorrect in amount, the plant investment and depreciation reserve accounts are automatically distorted.

of the original estimates, the depreciation reserve as of any date during the life is the amount which, together with future credits to the reserve will exactly equal the original cost of the unit or property less realized salvage, when the unit is retired. This situation exists, however, only by the merest coincidence. In practice, actual lives seldom, if ever, correspond with assumed lives used in determining depreciation rates. If there is a change in the estimate of service life of a unit during its life, the depreciation reserve accumulated will never equal the amount which should be in the reserve under the ideal conditions referred to, even though a new basis of credits to the reserve be adopted from that point forward. The Bell System in adopting new rates during the life of units in service takes no account of the amount in the reserve at the date the new estimate is adopted. Therefore, the reserve, with respect to these units, will never be the amount which should be in the reserve under the straight-line method as of the date the new accrual rate is adopted. It must be either more or less. Of course, it is possible to conceive of a situation where several changes in estimates during the life of a unit will so counterbalance or offset one another as to produce, as of a certain date, the correct amount in the reserve under the straight-line method, but this would be a mere coincidence. Barring such coincidence the reserve will always be found deficient or excessive when the unit is retired. This is true with respect to individual depreciation rates established for large units of property as well as group or average rates applied to continuous structures and classes of plant consisting of large numbers of similar or homogeneous items.

A simple example will illustrate the foregoing. If we assume a single unit of plant installed at a cost of \$10 with an estimated service life of 10 years, with no salvage, the depreciation cost per annum is \$1. Further, assuming that the item has been in service for 5 years and a new estimate of total service life is then made of 20 years, such revised estimate produces an annual depreciation cost of 50 cents. There is at this time a depreciation reserve of \$5 and over the remaining 15 years there will be accrued \$7.50 or a total of \$12.50 as contrasted with the service value (original cost less net salvage) of \$10. This practice may, of course, have the opposite effect in an instance where the rate is changed due to an estimate of service life which is shorter than the estimate at the time of installation.

The history of Bell System depreciation rates has shown in general successive reductions in the composite rate over a long period of years, indicating longer service lives of units of plants. The effect of this condition, together with Bell System accounting practices referred to, would be to produce an overaccrual in depreciation reserve, provided offsetting factors are not present.

Bell System Engineering Practices Underlying Depreciation Cost Determination.

The Commission's definitions and instructions in the Uniform System of Accounts pertaining to depreciation apply to accounting practices only. In regard to the method of computing annual depreciation rates, item (A) of section 80 states that these percentage rates shall be based upon the estimated service values and service lives. The engineering work of determining the average life and net salvage for each class of telephone plant is mentioned in a general

way in item (C) of section 80, which requires that the company keep such records of property as will permit the determination of service-life indications by mortality, turn-over, or other methods, and salvage percentages. Clearly many methods of analysis may be applied within the scope of the instructions.

In determining the indicated average life of various classes of depreciable telephone plant the Bell System companies have used for certain classes of plant judgment alone, and for other classes an analysis of the record of what has happened in the past, and have applied to such analyses judgment as to what is likely to happen in the future in the light of reasonably expected developments. The most usual forms of studies and analyses may be designated as (1) turn-over cycle, (2) mortality studies, and (3) detailed engineering forecasts.

The judgment method, not supported by detailed studies or analyses was used early in depreciation accounting history before experience and historical data had been accumulated on which to base factual analysis of the length of life of a telephone plant. The application of judgment without the aid of supporting data to the determination of the life of a telephone plant is very unsatisfactory since judgment must necessarily be based upon the limited experience of individuals. The tendency is to base judgment upon the recollection of those units of property which have been retired and to lose sight of the great mass of property of perhaps greater age which is still in service. The tendency of the application of judgment is, therefore, to produce too short a service life and too high a depreciation rate. Judgment is, however, the only method available for estimating the average life of those classes of property for which adequate historical data are not available, such as underground conduit, creosoted pine poles, and various plant elements which have been developed and put in service so recently that no representative retirements have yet been made.

The turn-over cycle method consists of accumulating annual retirements of plant from a selected date back through the preceding years until the sum of such retirements equals the book cost of the property at that time. The method may also be applied by accumulating gross additions from a selected date backward through the years until the total is equal to the book cost at the starting point or selected date. This method depends in theory upon the assumption that all telephone plant of a given class is retired from service at the same age, an assumption which is far different from the known facts. Actually, telephone plant retirements are distributed over a wide range of ages. This indefensible assumption introduces an error of large and indeterminable amount into the results of the method, the error being always in the direction of too short an average life and too high a depreciation rate. Various refinements worked out by the American Co. have succeeded in only partially eliminating this error.

Mortality studies of telephone plant are based upon methods worked out by life insurance actuaries for the analysis of human mortality. Such studies can go only as far as the determination of the average life of plant which the company has experienced in the past, the way in which retirements of various parts of the plant have been grouped about the average life and the age distribution of the

existing plant. Insofar as future conditions may be expected to differ from those leading to past retirements of telephone property, judgment must be applied to the results of the mortality studies to determine probable future average lives and corresponding depreciation rates. As an aid to the application of judgment in estimating future life expectancy it will be helpful to have available mortality studies reflecting past experience which indicate the relative importance of different causes of retirements in the past. The termination of life of telephone plant is due to a variety of causes which operate with varying degrees of intensity during different periods. Depreciation studies so far made by Bell System companies have listed these causes, but have attempted no quantitative measurement of their individual effects.

For large units of plant, such as buildings and central offices, for which individual rates of depreciation are established, detailed individual engineering forecasts of the probable ultimate retirement dates are made by the Bell System companies. These detailed forecasts are subject to modification from time to time as the telephone company changes its plans for the ultimate disposition of its buildings or equipment as a result of changes in the growth of the community served, the introduction of new and improved types of equipment, or for other reasons.

The percentages of plant to which the American Telephone & Telegraph Co. claims each of the foregoing methods is applied are shown in table 56 below.

TABLE 56.—*Classification of Bell System book cost of depreciable telephone plant as of Dec. 31, 1935, according to the method underlying service-life determination*¹

JUDGMENT METHOD		Percent
Group I:		
Exchange right-of-way.....	\$10, 610, 000	
Toll right-of-way.....	24, 699, 000	
Toll aerial cable.....	141, 860, 000	
Toll underground cable.....	156, 495, 000	
Exchange underground conduit.....	253, 043, 000	
Toll underground conduit.....	77, 493, 000	
Exchange submarine cable.....	2, 577, 000	
Toll submarine cable.....	4, 403, 000	
Total.....	671, 180, 000	16. 9
ENGINEERING FORECAST METHOD		
Group II:		
Buildings.....	423, 065, 000	
Central-office telephone equipment.....	1, 076, 546, 000	
Total.....	1, 499, 611, 000	37. 6
TURN-OVER CYCLE METHOD		
Group III:		
Station apparatus.....	250, 713, 000	
Booths and special fittings.....	27, 571, 000	
Exchange aerial wire.....	40, 957, 000	
Toll aerial wire.....	177, 497, 000	
Furniture and office equipment.....	41, 778, 000	
Total.....	538, 516, 000	13. 5

¹ Source: Figures submitted by the American Telephone & Telegraph Co.

TABLE 56.—*Classification of Bell System book cost of depreciable telephone plant as of Dec. 31, 1935, according to the method underlying service-life determination—Continued*

ACTUARIAL METHOD		Percent
Group IV:		
Private branch exchanges.....	\$120,024,000	
Exchange pole lines.....	199,761,000	
Exchange aerial cable.....	278,288,000	
Exchange underground cable.....	449,281,000	
Toll pole lines.....	200,693,000	
Vehicles and other work equipment.....	26,219,000	
Total.....	1,274,266,000	32.0
Grand total.....	3,983,573,000	100.0

The length of life of telephone plant is dependent to such a large extent upon the adoption and execution of managerial policies, upon economic conditions influencing growth and expansion of the property, and upon developments and inventions in the art of telephony which render existing plant obsolete and uneconomical to operate, that accurate forecasts for the future are impossible. The best that can be done in determining probable future service life is to determine what service life has been in the past, to determine the relative weight of different causes of retirements contributing to past service life experience, to determine the continuity or probable change in managerial policy affecting the removal of plant, and to consider the probable effect of future changes in demand and in the communications art. It is, of course, obvious that the original estimate is subject to revision whenever the effect or magnitude of any of the causes stated becomes apparent. This may mean more or less frequent revision of the entire forecast.

Estimates of salvage for use in determining depreciation rates of telephone properties involve forecasts of the probable amount of reuse of existing plant after its removal from service in its present location and of the probable scrap or junk value in case the material is not reused. Estimates of salvage made by the Bell companies are usually based upon experience with amounts recovered from property retired from service either through reuse or disposal as junk. In order to eliminate the effects of changing price levels it often has been the practice of the Bell companies to express salvage as a percentage of the original cost of plant converted to a uniform price level.¹¹ This is accomplished by pricing the units of the plant retired at reproduction costs as of a certain date and adjusting salvage recoveries to the same price level. Plant retired when price levels are higher than those represented in the cost at which the plant is retired will yield more salvage than was provided for in the determination of annual depreciation charges. Conversely, plant removed when price levels are lower than those represented in the cost at which the plant is retired will result in salvage less than that provided for in the determination of the depreciation charges.

Attempts to estimate salvage recoverable during periods in the future resolve themselves into attempts to estimate future price levels. Changing conditions will obviously indicate the necessity for a revision of the original estimate.

¹¹ In certain rate case presentations the policy here described has been modified.

Depreciation as a Factor in Rate Making.

The problem of depreciation does not consist solely in the proper estimate of lives and salvage percentages for determining annual depreciation accruals, since the subject of accrued depreciation is also of large import in the establishment of telephone rates. In fact, the annual depreciation charges and the accrued depreciation to be deducted in developing the rate base constitute veritable Siamese twins, and must be treated as such. Regulatory consistency, financial integrity, and intellectual honesty all demand a rational and harmonious consideration of these inseparable elements, and the failure of Bell System companies to recognize and admit the necessity for such harmonious treatment of these two separate phases of the depreciation problem has resulted in lengthening rate hearings and in developing acrimonious debate.

It has been claimed by the Bell companies in rate cases that only certain of the many causes of eventual retirement of telephone plant, for which annual depreciation charges on the straight-line basis are made, are factors which cause a loss in value during the progress of the life of their properties. They have claimed that due allowance must be made for obsolescence and inadequacy and other functional causes of retirement in developing annual accruals, but at the same time they have contended that these functional factors do not materially detract from the value of property so long as it continues in service, or until its retirement is imminent. This position is tantamount to an assertion that physical deterioration is the only major cause of loss in value for rate purposes.¹²

The pursuit of this argument has resulted in rate-case claims by Bell System companies of accrued depreciation for valuation purposes limited usually to from 7 to 12 percent of the original cost of the properties, whereas the same companies have accumulated depreciation reserves from annual charges to operating expenses on account of the same properties amounting to from 20 to 35 percent of the cost of the plant. The effect of the adoption of these contentions would be to provide the company with a large portion of its cash requirements for constructing new plant out of earnings without obligation on the part of the company in the form of stocks, bonds, or other evidence of indebtedness. The difference between the amount in the depreciation reserve thus invested in plant and the much lower deductions from cost claimed on account of accrued physical deterioration represents plant which has cost the owners and financial backers of the Bell companies nothing, but on which they claim a right to earn a return.

These inconsistencies between company claims for large annual depreciation charges to be included in operating expenses and simultaneous contentions for relatively low amounts of accrued depreciation to be deducted for valuation purposes have given rise to major controversies in a large number of rate cases, notably in the *New York Telephone Co. case* ¹³ in which the Federal court held that the depre-

¹² For instance, in the presentation of testimony on behalf of the Wisconsin Telephone Co. before the Public Service Commission of Wisconsin in the Commission's State-wide investigation, No. 2-U-35, at p. 9652 of the Record, George F. Crowell, chief engineer of the Wisconsin Telephone Co., said: "As I previously stated, the life of the property is limited to a large extent by such factors as inadequacy, obsolescence, public requirement and casualties which when they do occur destroy the value of the property immediately and completely except for salvage recovery but do not affect its value until they do occur."

¹³ 36 Fed. (2d) 54.

ciation reserve was the best evidence which had been presented to it of the actual depreciation existing in the property, and in the *Illinois Bell case*¹⁴ in which the Supreme Court held that differences in the two kinds of depreciation as claimed by the company were irreconcilable.

The Interstate Commerce Commission based its decision concerning depreciation charges for telephone companies on the assumption that the straight-line method of charging depreciation carried with it the necessity for consistent treatment of the elements which produced depreciation for annual expense purposes and for valuation purposes. In its first decision, issued November 2, 1926,¹⁵ the Commission said:

As a result of making them (straight-line depreciation charges) a reserve will be created which will, if the charges have been accurately estimated, at any time equal the loss in existing property due to the process of consumption in service.

Later, in the same decision, appears the statement:¹⁶

It is essential to bear in mind, however, that there is an inseparable connection between the straight-line method and the principle that accrued depreciation, represented by the depreciation reserve, must be deducted in ascertaining rate-base value. If any other principle should hereafter be adopted by the courts, a reconsideration of the entire question of depreciation accounting would at once become necessary.

In its decision upon rehearing (177 I. C. C. 408) the Commission stated:

Our conclusion is only that the same elements which produced depreciation for accounting purposes likewise produced depreciation for valuation purposes, and they cannot properly be observed and taken into account in the one case and at the same time be overlooked and neglected in the other.

Other commissions have also discussed this matter. In a recent decision the Railroad Commission of California spoke of "the extreme and inequitable results" which must follow the adoption of any such position, and the commission's engineer testified that "the company's claims appeared to be so at variance with reason and facts as to cause the collapse of the method by its own inconsistencies."¹⁷ The Interstate Commerce Commission took the position that if a truly harmonious and equitable result cannot be attained under the straight-line method of developing annual depreciation charges, the alternative would appear to be the adoption of some other method of handling accruing depreciation.

Deterioration, obsolescence, and inadequacy, the three most important causes of loss in value, are known to change in varying amounts from year to year. Theoretically, the book depreciation reserve and the loss in value of the property itself will be equal if the annual depreciation charges credited to the depreciation reserve are equal to the depreciation occurring each year in the property. Under these conditions the accrued depreciation and the depreciation reserve are both equal to the accumulation of the depreciation which has occurred annually throughout the past life of the depreciable telephone plant less the depreciation completed through retirements.

Depreciation charges have constituted an important part of the total operating expenses of the Bell System companies. The total depreciation charges in 1910 amounted to a little over \$27,000,000.

¹⁴ 292 U. S. 151.

¹⁵ 118 I. C. C., p. 301.

¹⁶ *Ibid.*, p. 356.

¹⁷ *City of Los Angeles v. Southern California Telephone Co.*, 14 P. U. R. (N. S.) 252, 271.

They have increased steadily with the growth of the telephone plant, until in 1935 total depreciation charges for the Bell System companies amounted to over \$175,000,000. The relation of depreciation charges to total telephone operating expenses has remained fairly constant during the period from 1910 to 1935 at approximately 22 percent of operating expenses. In most of these years, the depreciation charges have been roughly equal to the current maintenance expenses. In 1936, depreciation provisions of the American Co. and the associated telephone companies aggregated approximately \$168,000,000 and the depreciation reserve at the end of the year was more than \$1,145,000,000, equal to 26.6 percent of the combined telephone plant of the companies, amounting to \$4,309,000,000, excluding construction in progress.

Although the telephone industry is generally considered to be more stable and less affected by variations in economic conditions than most industrial enterprises, revenues of the Bell System companies have varied materially with changing economic conditions between periods of business prosperity and business depression. The system's revenues reached a maximum of \$1,152,000,000 in 1930, but declined to \$894,000,000 in 1933. This represents a drop of over 20 percent during a period of 3 years. During this same period depreciation provisions charged direct to operating expenses decreased from \$183,000,000 in 1930 to \$172,000,000 in 1933, a decrease of only about 6 percent. The decrease in depreciation charges has been due in part to company estimates of the extent to which obsolescence and inadequacy as factors in depreciation have been less active during the depression years than they were prior to 1930.

In depression periods the telephone companies lose subscribers, the number of stations is reduced, and the number of telephone messages to be handled by the existing plant decreases. As a result the telephone plant which was designed to handle something in excess of peak requirements is more than ample to handle the reduced volume of business. Hence, major additions and rearrangements of the plant, which are required during periods of rapid growth, are postponed until such growth is again resumed. Since the majority of telephone plant retirements are made in connection with construction or reconstruction programs, the retirements during and immediately following the period of depression are reduced substantially to those required by the deterioration, or wearing out of the property only. Were depression conditions to continue in effect for a long period of time, the life of telephone plant would be substantially increased beyond that experienced during normal economic conditions or during periods of rapid growth. With falling prices during the depression period the salvage recoverable from plant retired is also reduced, but not to an extent sufficiently great to offset the effect of the increase in the length of life on the depreciation rate. Consequently, during periods of depression, depreciation rates, and annual depreciation charges required to compensate for the depreciation currently accruing in the property have become lower. The extent of this reduction in the actual depreciation rates used by the Bell companies depends upon the methods of analysis used and the relative weight given to the current low rates of property retirements and the assumptions made in anticipation of higher retirement rates in the future.

Certain State commissions in recent rate cases have reduced depreciation rates during the depression period in recognition of the reduction in retirements due to elimination of inadequacy. For instance, in the decision of the Maryland Public Service Commission in the *Chesapeake and Potomac case*, the commission said:¹⁸

The company points out that it is required by the Interstate Commerce Commission to base depreciation accruals upon the "straight-line" theory which contemplates uniform annual accruals which will aggregate the amount of the original cost of the item at the time of retirement. This commission approves of the straight-line method of accounting for depreciation, but understands that the line remains straight only so long as original assumptions prevail, and that every change in the estimate of service life must produce a variation from the straight-line previously determined for the class of property affected. The closest adherence to the straight-line method requires adjustments to accrual rates whenever conditions change, and when a change occurs of such magnitude and far-reaching effect as the present business depression, it is bound to have a very noticeable effect upon the proper rate of accruals for retirements in what has been, heretofore, a steadily expanding property.

The Maryland commission in this case did not interpret the straight-line method as requiring that the same percentage of book cost must be charged annually as depreciation from the beginning to the end of the life of a group of property units, but rather contended that the annual percentage of depreciation, represented by the slope of the straight line, will change from time to time with changes in economic conditions affecting the rates at which telephone plant is retired.

In the Wisconsin Commission's Report and Recommendations to the Federal Communications Commission, submitted April 30, 1935, appears the following quotation from that commission's decision in Docket No. 2-U-502, in which it fixed rates of depreciation for the Wisconsin Telephone Co.:

The witnesses for the company and for the commission agreed that the present and future length of life of telephone plant elements would be substantially longer, than was indicated by the company's analyses of past experience, which show the trend of service lives from 1922 to 1930, inclusive (exhibit No. 1). Both called attention to the decrease in rates of retirement of plant since 1930 as indicated by the table above.

The commission's staff converted the average retirement ratios of the last 3 years into terms of service lives by proper adjustment of mortality curves to obtain an indication of probable life if recent conditions should continue. The company seems to have relied largely on judgment in measuring the effect of this period of restricted growth on service life, guided by the expected interval before the number of stations in service again equals the 1931 peak (transcript, pp. 47, 48). It appears from the testimony that Crowell, for the company, has based his estimates on the assumption that predepression conditions will be restored by the year 1937, and that telephone growth and other factors affecting retirements due to inadequacy and obsolescence, during the 20 or more years from then until the end of the life of the present plant, will be the same as experienced between 1922 and 1930.

The recent low retirement rates are caused largely by the decreased effect of inadequacy, formerly one of the largest factors in terminating the life of telephone plant. The decreased effect of inadequacy is due chiefly to low rate of growth and excessive amounts of property for the present number of stations. The fact that telephone growth between 1921 and 1931 was abnormally rapid because of the combined effect of inadequacy of facilities following the cessation of construction during the war and the great business boom, together with the inevitable approach of the point of saturation in telephone usage, makes the correctness of the company's forecast extremely doubtful. * * *

In examining the relative merits of these two estimates of service lives, there appears to us to be strong support in orders of the Interstate Commerce Commission and in decisions of the United States Supreme Court (*Lindheimer v.*

¹⁸ Reported in 1 P. U. R. (N. S.) 1934, p. 379.

Illinois Bell Telephone Company, supra; Board of Public Utility Commissioners v. New York Telephone Company, supra for including in each year's operating expenses the depreciation which has currently accrued in the property during that year, a method which was not proposed by any of the witnesses, but is approached more closely by Colbert and Hill than by Crowell. The first finding of the Interstate Commerce Commission in order No. 14700 is as follows:

"1. We therefore find that depreciation is the loss in service value not restored by current maintenance and incurred in connection with the consumption or prospective retirement of property in the course of service from causes against which the carrier is not protected by insurance, which are known to be in current operation, and whose effect can be forecast with a reasonable approach to accuracy."

In a seasoned plant, the losses in service value from causes "which are known to be in current operation" are reflected in current retirement rates, and in the staff's study their effect on service life has been given weight by a proper adjustment of the company's graduated life tables (transcript, p. 140). Expected future losses in service value from causes not in current operation would have no place in current depreciation charges, according to the above definition. The Supreme Court in *Board of Public Utility Commissioners v. New York Telephone Company, supra*, says: "It is conceded that the exchange rates complained of are not sufficient to yield a just return after paying taxes and operating expenses, including a proper allowance for current depreciation." The inference is obvious that proper allowance should be made for current depreciation.

The Wisconsin commission gave considerable weight to the low retirement rates during the depression period as evidence of longer life of the property and lower annual depreciation rates. They emphasized the decreased effect of inadequacy as a cause of retirements, due chiefly to the low rate of growth and the excessive amounts of property in relation to the present number of stations.

The Railroad Commission of California and the Michigan Public Utilities Commission have dealt with the depreciation problem in rate cases along lines differing from the treatments so far discussed.

The position of the California commission is well defined in its opinion in *City of Los Angeles v. Southern California Telephone Co.*, P. U. R. 14, (N. S.) 252, reading in part as follows:

At this point it is appropriate to consider all of the evidence of value in the record except that relating to accrued depreciation. From consideration of all the evidence, including the historical cost of the property, and the present costs compared with historical costs and of the value of the property as a going concern, the fair value undepreciated, including allowance for materials and supplies and working costs for the property existing December 31, 1934, is determined for the entire company to be \$166,000,000 and for the Los Angeles extended area to be \$120,000,000.

ACCRUED DEPRECIATION AND DEPRECIATION EXPENSE

Perhaps the most important and certainly the most intricate issue presented centers there the amount reasonable and necessary as annual operating expense allowance for depreciation and its complement, the amount to be deducted from the property base because of accrued depreciation.

The company claims that it should be allowed as annual depreciation expense (in addition to those charges for that property retired through current maintenance or otherwise) a composite rate of about 4 percent of the property base. At the same time it insists that because of the high degree of maintenance and the fact that there are currently present no observable or known functional causes for retirement of any consequence, its property with a composite average age in excess of 7 years has suffered an existing depreciation of but 7 percent, compared with an accrued depreciation of more than 22 percent, if calculated on the basis of the same rates used by the company for calculating depreciation expense.

RESULTS BY THE STRAIGHT-LINE METHOD

The company for many years has accounted for depreciation expense upon the straight-line basis.^a The result obtained admittedly is not in accord with reality. "The lives of property" as testified to by Mr. Fleager, "do not follow that theory." Under this basis the company has built up a reserve which at the end of 1934 amounted to nearly three times its estimate of the depreciation existing in the property. On the identical assumptions and prophecies upon which the company estimates a straight-line depreciation expense percentage of 4.42, the past accrued depreciation, the Company estimates, equals an even higher amount than does the reserve.^b

Mr. Fleager, however, was of the opinion that the present reserve is adequate.^c If he is correct in this, it necessarily follows that the annual allowance for expense should be less.^d

* * * * *

OBSERVED DEPRECIATION AND RETIREMENT EXPERIENCE

The existing depreciation in the property, it is claimed by the company, reflects the fact of depreciation as disclosed by inspection and observation and uninfluenced by any theories and assumptions. It was revealed, however, by the city's cross-examination, and also affirmative testimony by Commission engineers, that actually there were various theories and assumptions underlying the company's estimate. It was the result of an attempted determination by inspection of a "condition percent" of the property which in turn was translated into value by the use of the same percentages.

Inspectors of the property generally reported its condition by nomenclature, such as "good," "fair," and "poor." To these were assigned percentages.^f Central-office equipment, referred to in the footnote, has, according to the company, practically zero value as salvage. Hence, under the percentage assumptions or assignments, at or about the time of retirement there occurs what the company witness characterized as "a comparatively precipitate drop" from a percent condition of around 83 percent to zero and which drop, still according to the theory, is translatable to value.^g

It is obvious that under the definitions and methods upon which the figure under discussion is based, functional causes of depreciation, characterized by the company's witness Scoville as amongst "the most deadly influences affecting the life of a telephone plant," are almost completely ignored. As expressed by Mr. R. A. Wehe, engineer of the commission who has specialized in the subject of depreciation, "to follow a type of service theory of value * * * which would find a depreciated cost from 80 to 100 percent throughout the life of a plant unit, and then indulge in the hypothesis of suffering this final loss during the last stages of service, possibly within a matter of a few months before replacement, is to me so at

^a This has been pursuant to accounting instructions of the Interstate Commerce Commission.

^b Mr. Fleager testified that if the expense rates claimed by the company had been approved then the figures represented in his estimate would be those which should appear in column 2 of schedule 6 of the depreciation report prepared originally in accordance with the requirements of the Interstate Commerce Commission, which column is headed "Estimate of Past Accrued Depreciation" (ex. 78, p. 60). He explained how his estimated figure was arrived at as follows:

"... we have two methods in actually computing this, and we have used in certain accounts one method and in other accounts another method, that is, whichever one of the mechanics was more convenient to get the answer. One was to find, with the prophecy of the future life that you have for a piece of property, how much additional reserve should be accumulated, and knowing the salvage and how much additional reserve should be accumulated, why, you should know what should be in the reserve for it. The other method is to reverse that transaction and begin with the birth of the property and with those rates, with the passage of time, to calculate what reserve should have been accumulated on that property. And, of course, the mathematical conclusions from this gives the total reserve requirement. They really lead to the same answer, only one is a positive way and the other is a negative way of getting that answer."

^c His testimony was: "We have built up a balance in our actual reserve for the company which, in my judgment, will protect the property. I think it is a proper reserve in view of all the circumstances."

^d Mr. Barnes testified that if the depreciation reserve requirement merely equalled the reserve then basically the use of longer lives would be proper with a consequently lower annual rate.

^e Thus, Mr. Ise, the company's witness, testified: "We compare that property to a property of exact size, type and kind, similarly located, 100 percent new. That is the percent condition."

^f To central office equipment, the most important item of the company's property, the percentages assigned ranged from 83 to 99 percent. Ise, in response to a question as to what would happen if a unit was to fall as low as 75 percent, testified it is "inconceivable to me that anything could grade that low because we do not allow central-office equipment to get in any such condition—using these percentages as a basis for grade."

^g The manual central-office equipment in the Drexel office in Los Angeles, which office was originally installed in 1911, for some time has been programmed for conversion to dial equipment in 1936. The retirement of such manual equipment and the substitution of dial equipment is dictated by considerations of "over-all economy." Nevertheless, according to the company's theory the "precipitate drop" in percent condition, and hence value, is set off by the issuance of an open work order for the conversion.

variance with reason and facts as to cause the collapse of the method by its own inconsistencies."

* * * * *

RESULTS OF SINKING-FUND METHOD

As this commission has frequently pointed out, such conflicts and inconsistencies as have been discussed herein in the treatment of depreciation in rate cases may be avoided by the use of the sinking fund method. No estimate of the highly controversial issue of accrued depreciation is needed in this method, the undepreciated property value being used as the base. The amounts accrued are in most properties, as in this company, invested in the property and with a reasonable interest return thereon are sufficient to replace the property at the end of its estimated useful life. The method has been followed for many years by this Commission.¹

In *Los Angeles G. & E. Corp. v. Railroad Commission*, *supra*, the commission tested earnings for rate purposes in accordance with its usual practice by making no deduction for accrued depreciation, but with the expense of depreciation taken as a reasonable sinking fund annuity. The court did not criticize this method of treatment. There was, however, a commission finding as to the amount of accrued depreciation, but this in fact played no part in the final determination. The same procedure will be followed here. * * *

In its opinion in re *Michigan Bell Telephone Co.* (10 P. U. R. (N. S.) 149) the Michigan Public Utility Commission discussed various phases of valuation and depreciation problems. The basic thesis of the treatment there discussed is set forth in the following words:

VALUATION DEPRECIATION

Under this heading will be considered the relationship between the capital value or rate base and the income requirement. Because, as we have stated, capital value is only a mode of expressing the present significance of an income to be distributed in time, it is this income which needs to be divided and allocated among depreciation and profit. These elements themselves are not obtained from abstract considerations but are the results themselves of the volume of income and its distribution in time. Since one element could not be explained standing alone, we consider them together as involved in the income and capital-value relationship, emphasizing especially the most complicated and controversial element, depreciation.

This we define simply as value loss. If a comparison is made in the value of an object, be it item or enterprise, as between two effective time points, and that of the later is less than the prior, the difference is depreciation. In fundamental aspect the reason for the diminution in value, if any, rests upon two factors which may be separately analyzed even though at times their effects are inextricably intermingled. The first factor is the change in the volume and time distribution of income; the second factor, if it is present, will consist in any change in the rate at which the dollar of prospective income is valued—that is the rate of discount.

* * * * *

The annual income shown in column 3 of the following table is obtained by first ascertaining the price requirement per unit of service to yield a profit of 6 percent upon an investment of \$100 in an item having an output in terms of units or percent of capacity as indicated in column 2. * * * and it is only necessary to multiply the annual quantities of output by the rate per unit to ascertain the probable income for each year, as indicated in column 3. Upon the assumptions of income thus made the mutations in capital value indicated by columns 4 and 5 necessarily ensue, and the result is the annual depreciation as shown in column 6. It should be noted that the conditions of demand under which the service capacities of the item are exploited are such that as a result only 2.27 percent of its value may be said to be consumed in the first year. This relatively small amount is to be compared with what would be the case under an expectation of constant use—7.59 percent; or with the straight-line deprecia-

¹ See *Antioch v. P. G. & E. Co.*, 5 C. R. O. 19; *Re So. Cal. Ed. Co.*, 19 C. R. O. 595; *Re S. C. T. Co.*, 20 C. R. O. 881; *Re S. J. L. & P. Corp.*, 21 C. R. O. 545; *Re P. G. & E. Co.*, 22 C. R. O. 744; *Re Coast Counties G. & E. Co.*, 24 C. R. O. 69; *Re S. C. T. Co.*, 25 C. R. O. 721; *Re P. T. & T. Co.*, 33 C. R. O. 737; *Re L. A. G. & E. Corp.*, 35 C. R. O. 442; *Re S. D. C. G. & E. Co.*, 39 C. R. O. 279.

tion requirement of 10 percent. It is at once apparent that the assumption of a constant equal annual depreciation requirement of 7.59 percent makes the profit of the first year appear to be only 0.68 percent; while if straight-line depreciation accounting is applied to the example, a loss of 1.73 percent is shown to have been incurred. But in reality a profit of 6 percent was earned upon the initial value, and profit at the same rate continues to be earned upon the values, such as they are, at the beginning of each year.

TABLE IV.—*Valuation.—Depreciation and profit at 6 percent per year; Varying income*

1	2	3	4	5	6	7	8
Year	Units in use	Annual income	Value first of year	Value end of year	Depreciation	Profit	Profit rate
(a)	(b)	(c)	(d)	(e)	(f=d-e)	(g=c-f)	(h=g+d)
							Percent
1.....	50	\$8.27	\$100.00	\$97.73	\$2.27	\$6.00	6
2.....	60	9.92	97.73	93.67	4.06	5.86	6
3.....	70	11.57	93.67	87.71	5.96	5.61	6
4.....	80	13.22	87.71	79.76	7.95	5.27	6
5.....	90	14.88	79.76	69.66	10.10	4.78	6
6.....	100	16.53	69.66	57.31	12.35	4.19	6
7.....	100	16.53	57.31	44.22	13.09	3.44	6
8.....	100	16.53	44.22	30.24	13.98	2.55	6
9.....	100	16.53	30.24	15.63	14.61	1.92	6
10.....	100	16.53	15.63	-----	15.63	1.00	6
Total.....	-----	-----	-----	-----	100.00	-----	-----

The opinion of the Commission cites the following United States Supreme Court decisions as supporting its treatment of the problem:

Smyth v. Ames (1898) 169 U. S. 466, 546; *Southern R. Co. v. Kentucky* (1927) 274 U. S. 76, 82; *Darnell v. Edwards* 244 U. S. 564, 576; *Knoxville v. Knoxville Water Co.* (1909) 212 U. S. 1, 15; *Wilcox v. Consolidated Gas Co.* (1909) 212 U. S. 19, 49-51; *Des Moines Gas Co. v. Des Moines*, 238 U. S. 153, 173; *Galveston Electric Co. v. Galveston*, 258 U. S. 388; *Brush Electric Co. v. Galveston*, 262 U. S. 443; *Denver Union Stock Yard Co. v. United States*, 57 F. (2d) 735; *San Diego Land & Town Co. v. Jasper* (1903) 189 U. S. 439, 446; *Southern Pacific Co. v. Bartine* (1909) 170 Fed. 725, 767; *Boise City Irrigation and Land Co. v. Clark* (1904) 131 Fed. 415; *Long Branch Commission v. Tintern Manor Water Co.* (1905) 62 Atlantic 474.

On the basis of the preceding discussion the Michigan commission, after discussing other elements not related to this question, then proceeds to a determination of the combined depreciation expense and profit requirement in the following language:

In order to include a margin which will reasonably cover all elements of compensation, we may apply a combined requirement for depreciation and return of 7 percent of initial value. We do this merely to test the adequacy of existing rates, indulging in the assumption, for the purpose of the test, that use is constant in the degree represented by the present income.

The following tabulation will show the effect of comparing this requirement with the present revenues. The capital values refer to the total property of the company without apportionment among interstate and intrastate uses. The revenues likewise include the sums actually received and retained by the company for all services, including those of interstate commerce.

In applying to the initial value the requirement developed by the use of the complete physical service life, the result is the same as would be the case if the corresponding requirement by the use of the *remaining physical service life* were obtained and then applied to present value after depreciation.

TABLE VI.—*Michigan Bell Telephone Co. operating results—first 6 months of 1934 on basis of (A) company's reproduction cost new claims, and (B) book value with depreciation correctly treated on assumed basis of uniform fill to capacity (6 percent profit basis)*

	(A) Company re- production cost new	(B) Book value
1. Plant value.....	\$181, 073, 648	¹ \$170, 931, 078
2. Percent condition.....	87.1	87.1
3. Average physical value.....	\$157, 715, 147	\$148, 880, 968
4. Going value.....	9, 532, 642	(²)
5. Working capital.....	3, 003, 168	3, 003, 168
6. Average fair value.....	170, 250, 967	151, 884, 137
7. Depreciation and profit of physical plant (7 percent of 1 (annual).....	12, 675, 155	11, 265, 175
8. Profit requirements of going value and working capital 6 percent of 4 and 5 (annual).....	752, 149	180, 190
9. Total depreciation and profit requirements (annual).....	13, 427, 304	12, 145, 365
10. Total depreciation profit requirements (6 months).....	6, 713, 652	6, 072, 683
11. Available for depreciation, income tax, and profit.....	7, 035, 073	7, 035, 073
12. Excess.....	321, 421	962, 390
DISTRIBUTION		
13. Profit requirement, 6 percent of 6 (annual).....	10, 215, 057	9, 113, 048
14. Available for depreciation (9-13).....	3, 212, 247	3, 032, 317

¹ Average, first 6 months of 1934.

² No separate allowance.

The independent telephone companies, in recent consideration of the subject of depreciation, have contended that the same factors which caused gross telephone revenues to fall during periods of depression also caused the rate of depreciation to drop, and have emphasized the advantages of rules for depreciation accounting which should be sufficiently flexible to meet the requirements of individual companies. They interpret the strictly straight-line depreciation theory as requiring that the estimated total depreciation cost of a telephone plant be charged off at the same rate every year. This arises, they say, from the fact that under the straight-line theory when the depreciation for 20 years, as an illustration, is calculated to be a certain amount in dollars and cents, it is required that exactly one-twentieth of that amount be charged to operating expenses as the cost of depreciation in each of those 20 years. The independent companies have gone on record as disapproving this theory. They claim that depreciation does not occur at the same rate every year; even wear and deterioration are not the same every year, since they depend upon use and the elements, which are not the same every year; and certainly the two important factors of inadequacy and obsolescence are not the same every year, as proved by the depression. The independent telephone companies contend that a telephone company, which has lost, say, 25 percent of its telephones and still has its original plant available for serving its patrons certainly does not need to make the same provision for inadequacy now that it needed to make when its plant was practically filled up and still growing rapidly. They further claim that experience during the depression has shown that telephone companies in general have at least temporarily arrested the factor of obsolescence by the simple process of deferring indefinitely any retirements of equipment for this cause and retaining the present equipment in service.¹⁰

¹⁰ See exhibit 2080-A, p. 76.

Observed Depreciation and Accrued Depreciation as Factors in Determining Fair Value and Reasonable Rates.

The inconsistent contentions of the Bell System companies in respect to accrued and accruing depreciation have resulted in rendering the subject of public utility rate making more and more technical and complex during recent years. Estimates of percent condition of property, made by physical inspection and based upon personal judgment, have been presented by Bell System witnesses. Estimates of percent condition are usually described by their Bell System sponsors as unrelated to the age of the plant, or to its probable remaining service life, or to its efficiency or economy of operation as compared to other available types of plant, or to any other tangible measure of loss in value. Annual depreciation charges amounting to almost one-quarter of total telephone operating expenses have been presented by Bell companies as founded securely upon voluminous analyses of past experiences.²⁰ Under scrutiny the rates of depreciation appear to depend either upon the assumption that the past will be repeated, a condition which almost never occurs in telephony, or upon estimates of average life and salvage involving assumed knowledge of conditions in the distant future.²¹

The revenue requirements derived from the application of a complex technical process of rate making propounded by the Bell System companies provide, supposedly, a fair return upon the reproduction cost less observed depreciation of the property. Under this system a telephone company may grow and prosper, may expand its plant to meet all requirements, may give the best of service, and may pay high dividends on its common stock, all on earnings from rates which, were the company's contentions upheld, could be proved in any court to confiscate continuously the company's property. From a practical standpoint, the telephone company requires sufficient revenue to enable it to give adequate service, to maintain a modern plant by making renewals and replacements when needed, to attract adequate new capital, to cover interest charges, and to pay reasonable dividends on its stock.²² Stock, bonds, notes, and other evidences of indebted-

²⁰ For example, in testimony before the Wisconsin Public Service Commission on behalf of the Wisconsin Telephone Co. in the State-wide rate case, No. 2-U-35, Mr. George F. Crowell, Chief Engineer of the Wisconsin Telephone Co., stated at p. 9648 of the record: "The point is we do have very complete and accurate information in regard to the service life and consequently the depreciation rate can be set up and the reserve requirements can be determined."

²¹ U. S. Supreme Court in the case of *Lindhelmer et al. v. Illinois Bell Telephone Co.*, 292 U. S. 151, 169, said: "Confiscation being the issue, the company has the burden of making a convincing showing that the amounts it has charged to operating expenses for depreciation have not been excessive. That burden is not sustained by proof that its general accounting system has been correct. The calculations are mathematical but the predilections underlying them are essentially matters of opinion."

²² U. S. Supreme Court in the case of *Lindhelmer et al. v. Illinois Bell Telephone Co.*, 292 U. S. 151, 162, 163, said: "The financial history of the Illinois Co. repels the suggestion that during all these years it was suffering from confiscatory rates. Its capital stock rose from \$9,000,000 in 1901, to \$70,000,000 in 1923, \$90,000,000 in 1925, \$110,000,000 in 1927, \$130,000,000 in 1929, and \$150,000,000 in 1930. Its funded debt, which was somewhat less than \$50,000,000 in 1923, continued at about the same amount until 1930. During this period appellee paid the interest on its debt and 8 percent dividends on its stock. Its fixed capital reserves, which embraced the depreciation reserve presently to be mentioned, rose from \$37,575,004 in 1923, to \$63,966,745 in 1930, and to \$69,242,667 in 1931. The company's surplus and undivided profits over and above these capital reserves increased from \$5,600,326 in 1923, to \$22,907,654 in 1930, and to \$23,767,381 in 1931. Its fixed capital, that is, the book cost of total plant and general equipment, which was \$145,984,084 at the end of 1923, increased to \$288,381,090 at the end of 1930, and to \$291,250,580 at the end of 1931."

"This actual experience of the company is more convincing than tabulations of estimates. In the face of that experience, we are unable to conclude that the company has been operating under confiscatory intrastate rates. Yet, as we have said, the conclusion that the existing rates have been confiscatory—and grossly confiscatory—would be inescapable if the findings below were accepted. In that event, the company would not only be entitled to resist reduction through the rates in suit, but to demand, as a constitutional right, a large increase over the rates which have enabled it to operate with outstanding success. Elaborate calculations which are at war with realities are of no avail. The glaring incongruity between the effect of the findings below, as to the amounts of return that must be available in order to avoid confiscation, and the actual results of the company's business, makes it impossible to accept those findings as a basis of decision."

ness should represent the investment of outside capital in the enterprise, the remainder of the original cost being represented principally by invested surplus and depreciation reserve funds. Accordingly, if the company earns a fair return on the original cost less the depreciation reserve, provision will have been made for all fixed charges and dividends on stock with an additional amount to cover the invested surplus which represents additional common stock equity. Deduction of the depreciation reserve from cost in determining the rate base is therefore consistent with the provision of revenues sufficient in amount to maintain the integrity of the company's investment.

In addition to its soundness from a practical standpoint, the deduction of the depreciation reserve may be defended on purely theoretical grounds. In fixing current depreciation rates the ultimate length of life of any part of a telephone property and the salvage ultimately to be recovered are never known. Only the probable average life and probable salvage, based upon conditions known at the time, can be determined. The correct life for use in computing depreciation rates is the probable life, or the life most likely to be realized in the light of all knowledge available at the time. Similarly, the correct salvage is the probable salvage, or that having the best chance of being realized. If it be postulated that the correct depreciation rate must be that rate derivable from the life and salvage actually experienced at the time of retirement, then current depreciation rates can be only approximately correct, since these factors cannot be known with any degree of certainty in advance of the retirement date. If, on the other hand, it be recognized that by average life and salvage in the rules for depreciation accounting are meant the probable average life and probable salvage of the existing plant, then the depreciation rate derived from these quantities is the correct depreciation rate. The probable life and salvage will change from time to time, and with them the depreciation rate will change. Any depreciation rate derived from a sound analysis of known facts is the correct depreciation rate as of the time of its determination, and represents the depreciation accruing in the property. Under such rates there is no question of overaccrual or underaccrual of the reserve. Correct reserves are accrued by correct depreciation rates, otherwise the whole would not be equal to the sum of its parts.

The actual loss in value of a single unit of plant may not, of course, take place in a uniform manner, or along a straight line. Special studies of individual units have indicated that the depreciation of some units is greater and of others less than would correspond to straight-line accrual. For a large number of units, however, it may confidentially be expected that the average will approximate depreciation accrued on the straight-line basis. The depreciation reserve will then be the best available practical measure of the accrued depreciation from all causes actually existing in the property.

Summary.

The Bell System companies have accumulated depreciation reserves amounting on December 31, 1936, to \$1,145,000,000, nearly 30 percent of the total depreciable telephone plant, or 26.6 percent of the total book cost of telephone plant, excluding construction in progress. Most of this reserve has been accumulated since the Interstate Com-

merce Commission's Uniform System of Accounts became effective on January 1, 1913. Uniform System of Accounts for telephone companies prescribed by the Interstate Commerce Commission and the Federal Communications Commission, provide that the straight-line method of accounting for depreciation shall be followed. They define this method as the plan under which the service value of the property is charged to operating expenses and to clearing accounts and credited to the depreciation reserve through equal annual charges, as nearly as may be, during the service life. For the purpose of depreciation accounting, depreciation is there defined as loss in value incurred in connection with the consumption or prospective retirement of telephone plant in the course of service from causes which are known to be in current operation, against which the company is not protected by insurance, and the effect of which can be forecast with a reasonable approach to accuracy.

Annual depreciation charges included in operating expenses have been estimated by the Bell System companies since 1912 on a straight-line basis, whereby an attempt is made to determine the average life of each class of depreciable plant and to distribute the service value (cost less salvage) in equal annual percentages over the estimated life. Despite the use of complicated formulas, developed by the American Co., and voluminous computations, the depreciation rates in use in the Bell System are based to a large extent upon personal judgment of the expected life and salvage. Depreciation rates have been changed frequently in the past as estimates of life and salvage were altered. Ostensibly, the American Co.'s depreciation methods are designed to recover the original cost (less salvage) of a group of plant elements through annual charges to operating expenses at a uniform annual rate (as nearly as possible) throughout the life of the group. This purpose is not accomplished by the present method of computing each new depreciation rate as though it were to apply to new plant only, disregarding entirely existing accumulations of past depreciation charges against old plant. Analysis of past experience appears to indicate that the life of telephone plant is increasing gradually. Assuming a continuance of this condition, the method of revising annual depreciation rates from time to time as used by the Bell System has a tendency to result in annual depreciation charges in excess of probable needs to provide for the recovery of the service value of the property during its life.²³

Overaccruals for depreciation constitute concealed profits to the company, in addition to the apparent rate of return.²⁴ The depreciation reserves accumulated by the Bell System companies have made an equivalent amount of funds available through operations without the issuance of any additional stock or interest-bearing obligations.

Although depreciation reserves accumulated on the books of the Bell System operating companies have usually ranged from 20 to 35 percent of the book cost of telephone plant, the companies have consistently contended in rate cases that for valuation purposes the

²³ The special committee on depreciation of the National Association of Railroad and Utilities Commissioners and special-investigation engineers have made reference to the fact that the depreciation reserve will closely approximate the total requirement at the end of the service life of a particular unit (disregarding errors in salvage estimates), if the "remainder life" method of estimating depreciation rates is followed, whereby the service value less the accumulated depreciation reserve is spread over the remaining service life.

²⁴ This results from the decision in *Board of Commissioners v. New York Telephone Co.*, 271 U. S. 35, wherein it was held that amounts collected through telephone rates are the property of the company, and if too much has been collected to cover depreciation it cannot later be used to reduce depreciation charges.

accrued depreciation deductible from cost of plant should be only from 7 to 12 percent, and concurrently they have insisted that annual depreciation charges included in operating expenses should be continued at the annual rates established under Bell System practice, which produced the existing reserve balances.

As an extreme example of the inconsistency of the Bell System companies' position with respect to accrued depreciation, depreciation reserve, and annual depreciation rates, reference is made to *City of Los Angeles v. Southern California Telephone Co.* (14 P. U. R. (N. S.) 252, 271 (Cal., 1936)). With respect to \$47,662,000 book cost of central-office equipment, the company claimed an annual depreciation expense allowance of 4.8 percent and at the same time it contended that the existing depreciation accrued over the entire life of the property was only 4 percent. On total telephone plant and equipment, having a book cost of approximately \$159,000,000 excluding land and franchises, the annual depreciation claimed by the company was equivalent to a composite annual rate of 4.42 percent whereas the company's estimate of the existing depreciation was equal to only 6.99 percent of the book cost of the property, although most of the property had been in service for a considerable number of years.

To the extent to which funds made available from operations and represented by depreciation reserves have been invested in telephone plant, the effect of excessive depreciation charges, if any, is compounded by the application of annual depreciation rates to the portion of the plant represented by the excess depreciation reserve in the computation of further annual depreciation charges.

Failure to deduct accrued depreciation, in determining fair value, comparable in magnitude to depreciation reserves accumulated through annual charges to expense would permit Bell System companies to earn a return on amounts in excess of the investment made by the owners and security holders, or on a portion of the cost of property which has already (under the theory followed in estimating annual depreciation charges) been consumed in service.

CHAPTER 12

TOLL ACTIVITIES—DOMESTIC AND INTERNATIONAL¹

SECTION 1. DOMESTIC POLICIES AND PRACTICES

Three general policies have characterized the development of Bell System toll service. These policies are: (1) The development of a unified Nation-wide network of toll lines interconnecting the associated and connecting company exchanges and toll lines with long-lines toll-trunk routes; (2) the gradual absorption by the long lines department of the American Co. of substantially all interstate toll business for distances over 40 miles; and (3) the statement of toll rates on the board-to-board basis under which toll rates are stated to cover only the compensation for the use of facilities and services from the toll side of the exchange switchboard at the originating end to the toll side of the exchange switchboard at the terminating end, the exchange service facilities required to establish toll connection between the subscriber's telephone and the toll-terminal plant being compensated for by the rates for exchange service.

In the construction of toll lines and the establishment of toll rates the Bell System encountered little, if any, interference from regulatory bodies. Comprehensive regulatory laws were enacted in New York and Wisconsin in 1907. Since that time State regulatory statutes have been enacted establishing jurisdiction over telephone companies in all States except Texas, Delaware, and Iowa. The regulatory bodies created under those laws have interested themselves principally with exchange rate problems. The interstate operations of the Bell System have been subject to Federal regulation since the Mann-Elkins Act of 1910,² which vested jurisdiction over telephone companies engaged in interstate commerce in the Interstate Commerce Commission. The Interstate Commerce Commission, during the period 1910-34, inclusive, handled very few formal matters, either upon complaint or upon its own motion, relating to regulation of the interstate telephone business, other than the prescription of uniform systems of accounts³ and a consideration of matters relating to the depreciation of telephone properties⁴ pursuant to the mandate in section 20 (5) of the Interstate Commerce Act.

¹ See exhibits 134, 135, 580, 1360-A, 1261, 1955, 1956, 1959, 1960, 2094, 2095, and 2096-D. Data for the year 1936 were obtained from Bell System reports.

² 36 Stat. 539, C309.

³ The Interstate Commerce Commission promulgated a Uniform System of Accounts for Telephone Companies, first issue effective January 1, 1913. The Uniform System of Accounts for Telephone Companies, first revised issue, was made effective by the Interstate Commerce Commission on January 1, 1933. Upon objections of 22 State commissions, the case was reopened. The Interstate Commerce Commission refused to incorporate objections of State utility commissions. In view of the transfer of jurisdiction over telephone companies to the Federal Communications Commission, in July 1934, the Interstate Commerce Commission issued no order, but rendered a report (243 I. C. C. 13), for the benefit of the Federal Communications Commission. The latter Commission incorporated the objections of the 22 State utility commissions, and issued Telephone Division Order No. 7-C, on June 19, 1935, effective January 1, 1936. This order was upheld by the United States Supreme Court in 299 U. S. 232.

⁴ 118 I. C. C. 295 (1928); and 177 I. C. C. 351 (1931). The latter order was suspended and the matter passed to the Federal Communications Commission in 1934.

The failure to enact Federal regulatory legislation earlier and the apparent lack of active interest in the level of interstate telephone rates has permitted the development of the existing toll-rate structure and the expansion of interstate toll-line facilities virtually without effective regulatory control.

Inasmuch as the corporate history of the Bell System is treated in chapter 1, historical reference herein is confined to a discussion of such functional growth as is necessary to present the development of the above-stated policies. The functional relations of the long lines department and the associated companies are discussed in chapter 3. The operating results of the long lines department are treated in chapter 18. The international policies and practices of the American Co. are treated separately in section 2 of this chapter, because they involve considerations which are not common to the rendition of domestic toll service.

Development of Nation-Wide Interconnecting Toll System.

As early as 1878, Alexander Graham Bell envisioned a Nation-wide interconnecting telephone service. The efforts of Bell and his associates, and successively of the Bell Telephone companies, the National Bell Telephone Co., the American Bell Telephone Co., and the American Telephone & Telegraph Co., have been pointed toward the realization of that ideal. Upon the formation of the American Bell Telephone Co. in 1880, a three-point program, consisting of the following was developed: First, establishment of the parent company, the American Bell Telephone Co., which exercised first a license and later a financial control over local operating companies; second, the development of a system of long lines to connect local operating companies in a Nation-wide telephone system; and third, the acquisition of a manufacturing company closely associated with the telephone industry.

This program has continued to be a controlling policy of the Bell System to the present time. From the beginning the above program has been supplemented by the activities of a scientific department for research and development, presently known as the Bell Telephone Laboratories, Inc. This policy in regard to establishing a Nation-wide interconnecting system is clearly restated in the following statement made October 17, 1901, by Mr. George B. Leverett, of the legal staff of the American Co. to President Frederick P. Fish: ⁶

I take it that it is extremely important that we should control the whole toll-line system of intercommunication throughout the country. This system is destined, in my opinion, to be very much more important in the future than it has been in the past. Such lines may be regarded as the nerves of our whole system. We need not fear the opposition in a single place, provided we control the means of communication with other places. My opinion is that as far as possible we should control the toll lines ourselves, except as far as they are merely subsidiary feeders to our system, except in those districts where the opposition now have both exchanges and toll lines and the toll lines cannot be readily purchased, or in those districts where, on account of the extent of the country or from a lack of resources, there is no immediate prospect that we shall attempt to do the business.

The development of the present Bell System Nation-wide interconnecting system by the construction of toll lines by the American Co. and the associated companies, the development of technical devices which increased the distances over which effective transmission is possible, and the acquisition of associated and independent companies are discussed in the following paragraphs.

⁶ American Telephone & Telegraph Co. files, letter book of George B. Leverett, vol. 1, p. 8.

Early history of toll-line construction.—The telephone was first used commercially in the New England States. As exchanges were opened in a number of communities, the necessity for intercommunication between these exchanges became increasingly important. The early period of toll-line construction was confined largely to the New England territory, in which the New England Telephone & Telegraph Co., organized in 1883, operated. This company established a consolidated control over this region. Control of the industry in the New England section was achieved by building toll lines to complete connections throughout the region, with the result that at the expiration of the Bell patents in 1893-94, it was strongly entrenched, and rival companies were practically precluded from competing in that area because of lack of similar toll facilities. Toll facilities were also gradually extended into territories served and being acquired by the other associated companies. These interconnecting links between exchanges have played an increasingly important part in the development of the telephone industry.

The first long-distance line of great significance was completed in 1884, between Boston and New York. In 1885 the second important line was built, between New York and Philadelphia.⁶ By 1892, telephone communication had been established between New York and Chicago, and by 1898 trunk routes had been extended as far west as St. Louis, Minneapolis, and Kansas City. These latter points represented the maximum practicable distance possible for transmission of speech in the then state of development of the art.

Development of technical devices.—Subsequent to 1900, development of the toll system in the United States was accelerated greatly by technical developments, which increased the distance over which effective communication was possible. The development of the loading coil in 1900, which materially extended the clear and efficient transmission of speech, marked the first important epoch in the extension of toll service attributable to developments in the art. During the years following 1900, lines were extended west and south. The distance over which speech could be transmitted successfully was further extended by the development of the mechanical repeater in 1906, through the use of which a New York to Salt Lake City telephone circuit was established in 1913. Although this device served to amplify the voice currents, it did not prove entirely satisfactory under all conditions. However, it did serve as a forerunner to more satisfactory later developments in repeaters.⁷ The development of the vacuum tube and its successful incorporation into a vacuum-tube repeater was perhaps the outstanding development in the art, with respect to the successful extension of toll lines. This device, which amplifies voice currents, was first put into operation in 1914 on the Baltimore-New York toll line at Philadelphia. It was responsible for the satisfactory operation in 1915 of the first trans-continental line from New York City to San Francisco. There have been other far-reaching developments in the art⁸ affecting long-distance message service, but for the purpose of this treatment they are considered more in the light of refinements and economic developments than developments which proved vital factors in the Nation-

⁶ Those lines were financed cooperatively by the American Co. and the associated companies whose territories they traversed.

⁷ The details are shown in ch. 7.

⁸ See chs. 7 and 8.

wide expansion of the toll-line network. Two of the more important recent developments are carrier transmission and coaxial cable. If applied generally throughout the Bell System, it appears that these two developments will permit the handling of a much greater number of telephone messages at a substantially reduced cost per unit. It is possible to provide from 1 to 15 two-way carrier channels over a single pair of open wires. In the present form of coaxial cable, the transmission is limited to an upper frequency which provides a band sufficiently broad to permit the transmission of 240 carrier telephone channels in one direction.⁹

Acquisition of independent companies.—In chapter 5 it was pointed out that the Bell Telephone System developed historically into its present position of dominance in the communications field: First, through the ownership of basic patents from 1879 to 1894; second, by rapid expansion in new territories; and third, by the acquisition of independent telephone companies. The purpose of this immediate discussion is to trace briefly the acquisition of independent properties and companies.

The first important impetus given the development of this Nation-wide toll system resulted from the contract of November 10, 1879, under the terms of which the Bell System secured about 56,000 telephone stations in 55 cities and towns, previously owned and operated by the American Speaking Telephone Co. and the Gold & Stock Telegraph Co., subsidiaries of the Western Union Telegraph Co.¹⁰ While this acquisition was largely of exchanges, it increased the territory covered by Bell System operations and gave impetus to the further development of the toll system to interconnect Bell System exchanges. This agreement with Western Union eliminated the most formidable early competitor of the infant Bell System. Although there were other small competitors, they could not sustain the burden of the struggle, due to the forceful and vigorous manner in which the Bell interests enforced their patent rights through court action.

In 1902 the elimination of the holding-company competition offered by the Telephone, Telegraph & Cable Co., together with the elimination of the potential threat of the local and long distance competition sponsored by this holding company, insured the maintenance of the dominant position in telephone service sought by the Bell System. While there were sporadic attempts prior to and subsequent to the elimination of the cable company, this transaction eliminated the last serious threat to the development of a competing Nation-wide telephone system.

Results of the development of Nation-wide toll system.—The results of the policy of developing a Nation-wide interconnecting toll system have been the elimination of all effective toll competition and the introduction and expansion of various classes of communications services.

(1) Elimination of competition: Few toll lines owned by independents at the present time are over 100 miles in length. As a result, nearly all toll service requires the use of Bell System facilities. Independent exchanges must rely largely on interconnection with the Bell System toll lines in order to render toll service to their subscribers.

⁹ Ibid.

¹⁰ Details of this contract are discussed in ch. 5.

The Bell System's insistence upon standard connecting company arrangements, dictated by it, has given it control over not only the operation of the independents with respect to joint toll business, but also with respect to the revenue derived from such interchanged toll business. Development of this Nation-wide network of toll lines interconnecting the facilities of the associated Bell operating companies has tended to discourage the development of competition in the toll field and in the exchange field as well.

(2) Classes of service furnished over Nation-wide network: The long lines department of the American Co., the associated companies, and the connecting companies furnish either wholly or jointly the following classes of toll communication services: Toll telephone message service, private-line telephone service, private-line Morse telegraph service, private-line teletypewriter service, teletypewriter exchange service, private-line telephotographic service, program transmission service, and other toll services. These services are described briefly below.

(a) Toll telephone message service: The telephone message service rendered by telephone companies falls naturally into two divisions, exchange and toll. The basic service division is the exchange, which may be defined as that part of the telephone business which serves a single center of population, usually a city or town. The limits of the telephone exchange area are not always coextensive with the city limits, but may include service to the tributary area immediately surrounding the city. Telephone exchange rates are fixed generally at a uniform level for each class of service within the base-rate area, usually corresponding approximately to the city limits. Outside the base-rate area, the service is classified as "rural" or as "extended area," at uniform rates, or as "extraterritorial" service, at rates increasing with increased distance from the boundary of the base-rate area. Between exchanges, telephone companies provide toll or inter-exchange service, for which a per-message charge is made, the amount varying generally with the distance between points, the period of conversation, and hour of day when made. The two services, exchange and toll, are defined as follows in the Communications Act of 1934 (sec. 3):¹¹

(r) "Telephone exchange service" means service within a telephone exchange, or within a connected system of telephone exchanges within the same exchange area operated to furnish to subscribers intercommunicating service of the character ordinarily furnished by a single exchange, and which is covered by the exchange service charge.

(s) "Telephone toll service" means telephone service between stations in different exchange areas for which there is made a separate charge not included in contracts with subscribers for exchange service.

(b) Private-line telephone service: Private-line service was the first type of telephone service established, the lessor supplying the instruments and the lessee providing the connecting facilities. This form of service antedates exchange and message toll telephone services. Private-line telephone service is now furnished under contract, and consists of the provision of a telephone channel between two or more specified locations and necessary station equipment. This service is presently used chiefly by financial and industrial firms having offices or plants in more than one city, and by the press for the dissemination of news. Full-period service and short-period service are furnished.

¹¹ 48 Stat. 1064.

The rate is based on the length of the telephone circuit used, the number of hours the telephone circuit is in use, the particular time of the day or night during which the service is used, and the frequency of the recurring periods of use.

(c) Program transmission service: Program transmission service is used chiefly by radio broadcasting companies for transmitting radio programs originating at one or more locations to a chain of broadcasting stations, so that a single program may be broadcast simultaneously from several stations. It is used also for the transmission of speech from a central point directly to audiences at one or more points, by means of loudspeakers connected to the program circuits, commonly known as public-address systems. These are relatively new services and have increased with the growth of radio broadcasting.

(d) Private line Morse telegraph service: The long lines department and the associated companies provide the interconnecting facilities for communication by means of Morse signals. Except for limited operation on the Pacific coast, the Bell System does not at the present time furnish public message telegraph service, providing only the facilities under contract for use during specific periods of time. Private-line Morse customers furnish their own operators and, usually, their own instruments to transmit and receive the messages.

(e) Private-line teletypewriter service: This is one of the most recent classes of service, having been offered first in 1917. It is a type of telegraph service whereby communication is offered by means of machines similar in operation to the ordinary typewriter. Signals are sent over a telegraph channel to reproduce, at the receiving station or stations, the message from the transmitting station. The necessary transmitting and receiving equipment in the customer's office is supplied in some cases by the company, and in others by the customer. There are two main types of teletypewriters for printing received messages; one prints on a letter-size page, and is known as the "page" type; the other prints on a continuous tape, and is known as the "tape" type.

Teletypesetter service is a variation of teletypewriter service. It consists of arranging the receiving equipment so that it operates the keyboard of a typesetting machine.

(f) Teletypewriter exchange service: This service is an outgrowth of private-line teletypewriter service. It permits direct communication by means of teletypewriters between any two or more subscribers to the service. This service is handled in a manner somewhat similar to the regular telephone message service. Teletypewriter equipment in the office of the customer is connected to a switchboard at the central office. Subscribers' names are listed in a directory, and a subscriber may have an operator at the central office establish a connection with other subscribers. For certain business purposes, this service is useful in that it provides exact copies of the transmitted messages at the stations of all parties to the communication.

(g) Private-wire telephotographic service: Under this service channels are provided for the transmission of pictures and similar material between designated points. The long lines department and the associated and connecting companies provide interconnecting facilities for this purpose, and the customer owns or leases the necessary transmitting and receiving equipment. The only contract for telephoto-

graphic service now in effect is with a press association, which provides telephotographic service to a large group of newspapers located in many parts of the United States. Complete telephotographic service was inaugurated in 1925 between a limited number of points on a public message service basis, but was discontinued in 1933 due to limited commercial demand. The above-described service was offered as a substitute in 1935. In 1935 the use of customer-owned telephotographic equipment over ordinary toll-message facilities was authorized.

(h) Other toll and private line services: The Bell System furnishes private-line facilities for a variety of purposes such as telemetering, supervisory control, other signal purposes and reference frequency service. There are also a number of other minor uses of toll facilities on a rental basis which are classified under "other toll service revenues." The revenues from both of these groups are minor in magnitude as compared with the rest of the services rendered by the Bell Telephone System.

(3) Sources of revenue: The relative importance of these various classes of service, measured on a revenue basis for the year 1936, is shown on table 57.

TABLE 57.—Summary of toll-service revenues, Bell Telephone System in United States, year 1936

Class of revenue	Total	
	Amount	Percentage composition
Message tolls:		
Telephone and miscellaneous.....	\$270,492,802	87.58
Teletypewriter.....	5,494,785	1.78
Telegram.....	199,520	.07
Total message tolls.....	276,187,107	89.40
Toll private line service:¹²		
Telephone.....	10,988,944	3.56
Teletypewriter.....	8,501,854	2.75
Morse.....	6,898,642	2.23
Other telegraph.....	509,322	.17
Program transmission.....	5,693,618	1.81
Other services.....	97,957	.03
Total toll private line service.....	32,590,337	10.55
Other toll service revenues.....	163,563	.06
Total toll service revenues.....	308,941,007	100.00

¹² One of the important sources of revenues from private-line services is from leasing wires to racing news agencies and their patrons for Nation-wide dissemination of sporting news. In 1935 this revenue totaled more than a million and a quarter dollars. One agency was the sixth largest customer of the long-lines department. In 1936 the interstate business of supplying racing news was largely in the hands of the Nation-wide News Services and its subsidiary, the Interstate News Co., the former operating in some 200 cities in 24 States, and 3 Canadian Provinces, and the latter operating in 23 cities in 6 States.

The ease with which racing news information can be obtained and disseminated through the use of Bell System facilities has contributed to the difficulties of enforcing antigambling laws in certain jurisdictions. The facts developed during the investigation indicate that in many instances the officials of the Bell System had full knowledge of the character and extent of the operations carried on by their patrons and made arrangements with law-enforcing officers to protect the Bell System equipment. For detailed development of this subject see Transcript of Record, Federal Communications Commission, Special Investigation, Docket 1, pp. 176-198, 259-285, 294-304, 323-361, 387-389, 395-397, and exhibit Nos. 6-8, 14-22, 24, 25, 39, 44, 45, and 127.

Source: American Telephone & Telegraph Co.'s Comptrollers' Report, 1936, pt. 1, statement 14.

(4) Growth of Bell System toll business: Since the incorporation of the American Co. in 1885, the Bell System toll business has grown from an infant industry striving to solve the problems incident to the construction of the first toll line to a highly developed and extremely important link in the world-wide system of communications service. Since 1885 the Bell System expanded its toll outside plant in the United States from 30,697 miles of pole line and 41,745 miles of wire to a total of 169,138 miles of pole line and 15,396,000 miles of wire in 1936. This growth may be measured by the increases in the annual number of messages transmitted, and other operating results. Table 58, page 359, shows the growth of Bell System toll business in the United States measured by number of messages, total revenues, message revenues, and miles of wire for the 24-year period 1913 to 1936, inclusive. Data for preceding periods are not readily available and might not prove comparable because of lack of consistent accounting treatment prior to 1913, in which year the Interstate Commerce Commission first prescribed accounting rules and classifications for telephone companies.¹³ Because of the joint nature of costs incurred and the accounting methods employed by the Bell System, it would be extremely difficult to measure the growth in fixed-capital investment devoted to toll services separate from that devoted to all services.¹⁴

An examination of table 58 shows that except for 1914, there was a consistent increase in the annual number of Bell System toll telephone messages for the period 1913 through 1929. During the period 1930 through 1933, there was an annual decrease in number of messages. Since 1933 there has been a continued increase through 1936. The number of messages handled in 1936 amounted to 821,574,000 as compared with 259,576,000 in 1913. In 1929, the peak year, the number of messages totaled 1,026,572,000, or almost 4 times as many messages as were handled in 1913.

The revenues derived from toll business followed much the same trend as the toll messages and increased from 1913 to 1929, declined from 1930 through 1933, increased in 1934, and continued to increase each year over the previous year through 1936. In 1913 the Bell System derived \$51,868,000 from message toll business and \$3,973,000 from other toll services, whereas in 1936 message toll revenues amounted to \$270,493,000 and other toll services produced \$38,448,000. In 1929, the peak year, the message toll revenues amounted to approximately \$316,000,000, more than six times the amount produced in 1913.

The decreases in annual number of toll messages and annual toll revenues shown for the period 1930 through 1933 may be attributed to the general adverse economic conditions existing during this period.

¹³ See footnote 3. The outside plant statistics are from the American Co.'s comptroller's annual report for 1936, pt. I, statement No. 47.

¹⁴ This subject is detailed subsequently in this chapter.

TABLE 28.—Growth of Bell System toll business in the United States, years 1913 to 1936, inclusive

[000 omitted]

Year	Telephone toll messages			Toll revenues			Telephone toll message revenues ¹			Miles of toll wire		
	Associated companies	Long lines	Total Bell System	Associated companies	Long lines	Total Bell System	Associated companies messages	Long-lines messages	Total Bell System messages	Associated companies	Long lines	Total Bell System
1913.....	247,919	11,657	259,576	\$44,157	\$11,684	\$55,841	39,644	\$12,224	\$51,968	1,815	519	2,334
1914.....	245,561	11,701	257,262	45,430	13,879	59,313	40,834	12,479	53,313	1,917	521	2,438
1915.....	252,890	12,980	265,870	48,433	15,627	64,060	43,251	14,715	57,966	1,934	520	2,454
1916.....	273,590	14,244	287,834	55,053	16,970	72,023	49,674	17,364	67,038	2,151	532	2,683
1917.....	311,454	16,268	327,722	63,661	19,800	83,461	57,064	20,528	77,592	2,451	638	3,089
1918.....	328,572	17,984	346,556	70,548	22,515	93,063	61,749	24,564	86,313	2,572	762	3,334
1919.....	358,597	20,622	379,219	86,229	30,645	116,874	74,586	32,945	107,531	2,668	852	3,520
1920.....	407,149	24,207	431,356	102,578	37,462	140,040	88,943	38,454	128,397	2,855	918	3,773
1921.....	416,851	23,814	440,665	107,294	37,261	144,555	93,185	38,717	131,902	2,974	1,064	4,038
1922.....	467,132	27,785	494,917	118,469	42,509	160,978	102,412	44,918	147,330	3,113	1,066	4,209
1923.....	516,224	30,894	547,118	129,776	46,331	176,107	111,770	49,603	161,373	3,382	1,187	4,569
1924.....	564,859	31,584	596,443	141,111	46,733	187,844	121,507	50,530	172,037	3,763	1,318	5,081
1925.....	652,368	33,731	686,099	163,844	53,210	217,054	143,005	55,816	198,821	4,088	1,545	5,633
1926.....	743,152	33,465	776,617	186,630	58,252	244,882	167,651	57,334	224,985	4,478	1,819	6,297
1927.....	819,277	35,646	854,923	203,842	63,807	267,649	183,150	62,029	245,171	5,297	2,247	7,544
1928.....	886,168	42,209	928,377	225,969	79,344	305,313	200,761	77,410	278,171	5,906	2,871	8,777
1929.....	977,259	49,313	1,026,572	256,317	83,363	344,010	221,439	84,421	315,860	6,925	4,083	11,008
1930.....	892,444	50,528	942,972	249,709	94,301	344,010	212,120	95,019	307,139	8,171	5,211	13,382
1931.....	884,567	48,380	932,947	233,005	86,023	322,028	195,671	90,918	286,589	8,482	6,054	14,536
1932.....	699,890	38,011	737,901	189,039	70,762	259,801	156,753	70,960	227,718	8,591	6,676	15,267
1933.....	633,402	35,477	668,879	173,075	70,831	243,906	142,014	70,740	213,434	8,574	6,676	15,243
1934.....	662,859	37,459	700,318	184,602	74,069	258,671	152,011	75,231	227,246	8,487	6,685	15,172
1935.....	692,500	39,823	732,323	195,390	78,083	273,473	160,730	78,516	240,246	8,566	6,772	15,338
1936.....	773,996	47,578	821,574	219,305	89,636	308,941	178,991	91,502	270,493	8,697	6,699	15,396

¹ Gross message value before commissions and prorates.

Source: Telephone toll message data and telephone toll message revenues are from exhibit 1361, schedule 2; toll revenues for the Bell System are from Bell System data sheet No. 201, a photostat copy of which, along with others, is contained in the Federal Communications Commission's files relating to exhibits 1360-A and 1360-B. The long-lines toll revenues are from exhibit 135, schedule 24, excluding official tolls, telegrams, etc., billed against general department. The associated companies' toll revenues are the result of subtracting long lines from the total. Miles of toll-wire data are from exhibit 1360-A, pp. 115, 134, and 147.

NOTE.—Total Bell System toll revenues shown for 1932 and prior years will differ from published reports because they have been adjusted by the American Co. to make them comparable with the later years, the system of accounts having been revised effective Jan. 1, 1933.

The increases in annual toll revenues during the 24-year period, 1913-36, inclusive, shown on table 58, resulted from the substantial increase in the number of messages transmitted and the increase in average revenue per message from 20 cents in 1913 to 33 cents in 1936. The Bell System toll-wire mileage increased gradually from 2,334,000 miles in 1913 to a total of 6,297,000 miles in 1926, which represented an average annual increase of more than 300,000 miles. From 1926 through 1932 an average of approximately 1,500,000 miles was added each year, making a total mileage of more than 15,000,000 at the end of 1932. This total wire mileage remained practically unchanged through 1936. The wire mileage at the end of 1936 (15,396,000) was almost seven times as great as the wire mileage at the end of 1913 (2,334,000). The accelerated rate of growth in wire plant during the period 1926 to 1932, inclusive, reflected the growth in toll business experienced up to 1930 and also the change in types of outside plant construction. In general, prior to 1926, toll-wire plant was installed only as required for greater traffic loads. The open-wire type of toll-line construction commonly in use permitted economical installation of additional circuits as increasing volume of traffic required. After 1925 the increasing use of aerial and underground cable desirable from the standpoint of continuity of service and economy of investment, resulted in greater advance provision of facilities than had prevailed with open-wire use, which increased wire mileage much more rapidly than would have occurred in providing for the same volume of business by open-wire construction. Partial evidence of the extensive use of cable construction is indicated by the fact that toll conductors carried in underground cables increased from approximately 2,000,000 miles in 1925 to 6,000,000 miles in 1931.¹⁵

The above statistics related to the total Bell System toll operations which are divided between the associated companies and the long lines department of the American Co. While these data indicate a phenomenal growth in that business, the growth of the long lines department toll business has been in excess of that of the associated companies. The division of the total toll business as between the long lines department and the associated companies is dictated by the policies of the American Telephone & Telegraph Co. prevailing from time to time with respect thereto.

(a) Growth of long-lines toll-message business: The growth of long-lines toll-message business for the 24-year period 1913 to 1936, inclusive, has been more rapid than the growth of the message-toll business of the associated companies. Table 58, on page 359, shows the number of long lines and associated company telephone-toll messages, total toll revenues, message toll revenues, and toll-wire plant over the period above indicated. The number of long-lines toll messages in 1936 was more than four times that in 1913 in contrast to a similar ratio of approximately three times in the case of the associated companies for the same period. The revenue from long-lines messages in 1936 was more than seven times that in 1913, in contrast to a similar ratio of more than 4.5 times in the case of the associated companies for the same period. The greater rate of increase in long-lines-message toll revenues than is indicated by comparison of the growth in toll messages handled by the long lines and the associated

¹⁵ See American Telephone & Telegraph Co. Comptroller's Annual Report for 1936, statement No. 47.

companies results from the fact that the average revenue per long-lines message increased more than the average revenue per associated-company toll message. The average revenue per long-lines message amounted to \$1.05 in 1913 as compared with \$1.92 in 1936, which represents an increase of 83 percent as contrasted with the average revenue per associated-company message of \$0.16 in 1913 and \$0.23 in 1936, or an increase of 44 percent. The larger increase in the revenue per long-lines toll message was brought about largely through the expansion of long lines department toll lines and through the increasing demand for connections between more distant points in the United States, thereby increasing greatly the average distance over which long-lines messages were transmitted. This is reflected in the growth of the toll-wire plant, which in 1936 was about 13 times that of 1913, in contrast to a similar ratio of less than 5 times in the case of the associated companies during the same period.

This table indicates further that the growth of long-lines message toll business has not increased in the same relative proportion as that of the associated companies in each and every year during the period 1913 to 1936, inclusive. This was due primarily to transfers of both interstate and intrastate business between the long lines and the associated companies. During the 6-year period, 1921 to 1926, inclusive, the long-lines growth in message-toll business was much less rapid than that of the associated companies because substantial portions of the intrastate business that had been handled by the long lines was relinquished to the associated companies.

The growth in long-lines-message toll revenues is due largely to the following important factors: (1) Increase in the number of telephone subscribers and telephone stations in service; (2) general expansion of long-lines toll circuits interconnecting the larger urban centers; (3) developments in the art of long-distance voice transmission and in increased efficiency in toll-system operation which greatly improved the quality and speed of toll service; (4) stimulation in the volume of message-toll business as the result of reductions in general rate tariffs, reduction of rates for night, evening, and holiday services, and the reduction in charges effected by the introduction of station-to-station service; (5) intensive national advertising and subscriber education regarding utilization of toll services; (6) general commercial and industrial expansion; and (7) general acceptance of telephone service by the public as an effective instrumentality for long-distance business and social communication.

Telephone-message toll revenues for the year 1936, in the amount of \$270,493,000, were 87.55 percent of the total Bell System toll revenues, as shown in table 57. The remaining 12.45 percent was derived from teletypewriter-exchange, private-line, and other services. Because of the importance of telephone toll-message business from a revenue standpoint, more detailed discussion of this particular class of service is presented.

Measured by revenues, a large portion of total interstate telephone toll-message business is handled wholly or in part over long-lines facilities. The methods employed and the allocation of expenses and division of revenues involved in the conduct of this jointly handled business are subsequently detailed.

Division of Interstate Message Toll Business Between the Long Lines Department and the Associated Companies.

Prior to 1926 the long lines participated, to a limited extent, in intrastate operations. Since that time its activities have been limited to interstate operations. Table 58 shows that the 732,323,000 telephone toll messages handled by the Bell System in 1935 produced \$240,246,000 in revenues. A Bell System analysis ¹⁶ for 1935 indicates that approximately 79 percent of the total toll telephone messages for the year were intrastate and were handled wholly by the associated and connecting companies; approximately 16 percent consisted of interstate messages handled wholly by the associated and connecting companies; and 5 percent represented interstate messages handled jointly with the long lines department of the American Co. The 79 percent of the messages representing intrastate business handled wholly by the associated and connecting companies produced 56 percent of the revenues. The 16 percent represented by interstate business handled wholly by the associated and connecting companies produced 12 percent of the revenues, and the 5 percent representing interstate business handled jointly with the long lines department produced 33 percent of the gross toll telephone message revenues. Considering only the interstate business, approximately 75 percent of the number of messages was handled entirely by the associated and connecting companies and produced approximately 25 percent of the interstate revenues, and the 25 percent handled jointly with the long lines department of the American Co. produced approximately 75 percent of the interstate toll telephone message revenues. The variation in the relative proportion of total Bell System telephone message toll business, as measured by messages and revenues, results generally from the greater average lengths of haul for interstate messages handled in part over the facilities of the long lines department. The division of Bell System toll telephone message business measured by messages and revenues, as indicated by the company's study, is summarized below:

	Percentage division	
	Based on messages	Based on revenues
Intrastate: Handled wholly by the associated and connecting companies.....	79	56
Interstate:		
Handled wholly by the associated and connecting companies.....	16	12
Handled jointly with the long lines department.....	5	33
Total, interstate.....	21	44
Total, intrastate and interstate.....	100	100

The division of the business between long lines and the associated companies, the method of conducting long-lines interstate-toll-message business, the division of revenues between long lines and the associated companies, and other factors incident to the general conduct of interstate-toll-message business are now discussed.

¹⁶ Bell System, estimated break-down of telephone toll messages and revenues, year 1935, dated February 4, 1936.

Division of business between long lines and associated companies.—The division of toll business between the associated companies and the long lines is set forth in the license service contracts¹⁷ and the traffic arrangements between the individual associated companies and the American Co.

Under the general plan of toll operation now in effect, the long lines department handles interstate-message toll business between the operating territories of the associated companies for rate distances in excess of 40 miles¹⁸ and a portion of the interstate business within the territories of the Northwestern Bell Telephone Co., the Southwestern Bell Telephone Co., and the Southern Bell Telephone & Telegraph Co. Virtually all interstate business under 40 miles is handled by the associated companies and their connecting companies. The Pacific Telephone & Telegraph Co., the Mountain States Telephone & Telegraph Co., and the New England Telephone & Telegraph Co. handle all interstate business within their respective territories. The Northwestern Bell Telephone Co., the Southwestern Bell Telephone Co., and the Southern Bell Telephone & Telegraph Co. handle a part of the interstate business within their respective territories. Part of the long-lines-message toll business is handled exclusively over its toll-line facilities, the remainder being handled in connection with the toll-line facilities furnished by either or both the associated companies and their connecting companies.

Method of conducting long lines interstate-toll-message business.—The long lines department owns most of the interstate toll lines, together with repeater, carrier, and other equipment associated therewith. There are more than 17,000 telephone exchanges¹⁹ in the United States, more than 90 of which are in cities having a population of more than 100,000. The long lines department furnishes direct circuits to 78 of these larger cities, but reaches directly only 502 of the remaining smaller exchanges. The toll-line facilities required to complete connections between the circuits of the long lines department and the smaller exchanges are furnished by the associated and connecting companies. Those latter companies also provide all exchange plant and equipment required for originating and terminating toll messages and all toll switchboard equipment except at 13 locations. The toll switchboard equipment at these 13 locations is either leased or owned by the long lines department.²⁰ The terminating facilities furnished by the associated and connecting companies include toll-switchboard equipment, the land and buildings housing such equipment, the toll switching and recording trunks connecting the toll and exchange switchboards, the exchange switchboards, and the land and buildings housing such equipment, the subscribers' station equipment, and the outside plant connecting the subscribers' stations with the exchange switchboard.

The long lines performs the toll traffic operating, either wholly or in part, at the above-mentioned 13 locations. Toll operating at all other points and exchange switchboard operating at all points is

¹⁷ The provisions of the license service contract have been discussed in ch. 6.

¹⁸ A small portion of the intercompany interstate business under 40 miles is handled, in part, over facilities of the long lines department.

¹⁹ The figures relate to statistical data as of December 31, 1937.

²⁰ The long lines department owns few toll switchboards but leases a considerable amount of such equipment from the associated companies. The long lines department does part or all of the toll operating at the following locations: Boston, Buffalo, Cincinnati, Cleveland, Detroit, Louisville, Kansas City, Memphis, Minneapolis, New York, Philadelphia, Pittsburgh, and St. Louis.

performed by associated companies and connecting companies, which also perform services in billing and collecting interstate toll revenues.

The revenues collected by the associated companies for long-lines messages are divided between them and the long lines department according to the terms of the license-service contract. Settlements with the connecting companies for their services in connection with originating, terminating, and transmitting long-lines messages are made by the associated companies, which in turn settle with the long lines department. In addition to this division of revenues, other compensation is interchanged between the associated companies and the long lines department in the form of payments for services and rentals for telephone plant and equipment. A discussion of the method of compensation on long-lines toll business follows:

Division of revenues between long lines and associated companies on jointly handled toll business.—The license service contract²¹ establishes the duty of the licensor to maintain connections between territories and systems of the licensee as well as between points within territories with which the licensee is not authorized to connect and obligates the licensee to route messages over the lines of the licensor. It describes the method of prorating revenues from business handled over a through line made up of line facilities furnished by both parties and sets forth the amounts per message to be paid by the long lines in the form of commissions. According to the contract, the commissions compensate the associated companies for the use of all facilities and services in originating and terminating long-lines toll messages except the exchange-service facilities required to establish connection between the exchange station and the toll-terminal plant. With respect to the excepted facilities, the contract states that the associated companies are compensated for their use by its rates for exchange service. The plant and equipment used in establishing connections between the subscribers' station and the toll-terminal plant include the subscribers' station apparatus and equipment, the subscribers' line plant connecting the telephone station to the exchange switchboard, the exchange switchboard itself, and the land and buildings housing such equipment. This method of dividing revenues assumes that toll rates are made on the "board-to-board" basis of rate making, which is discussed and compared with the "station-to-station" basis later in this chapter.

Methods of compensation in use.—A brief description is given herein of the various methods under which the associated companies are compensated for services and facilities used in handling long-lines telephone messages. The services and facilities involved in handling toll messages consist of those required to originate and terminate the message, including the accounting and billing therefor, and of those required to transmit the message between toll switchboards. Payments are divided into the following classes; (1) Those which are calculated on a per message basis; (2) those which are based upon an amount per message, plus amounts determined on a cost basis; (3) those based entirely upon costs; and (4) those based upon standard, usually reciprocal, rental rates.

(1) *Payments on a per message basis.* The services rendered and the facilities provided by the associated companies in originating and terminating long-lines toll messages are recognized in the division of

²¹ For details, see ch. 6.

revenues in the form of commissions expressed as cents per originating message. The services rendered and facilities provided by the associated companies for the transmission of messages between points are similarly recognized through prorates based upon the relation of the air-line mileage supplied by each company to the total air-line mileage measured through the point or points of connection of the systems involved.

Each associated company receives compensation on long-lines toll messages originating or terminating in its territory,²² in the form of commissions calculated as an amount per originating message. The amount of commission is specified in the license service contract. Two standard schedules of commission payments providing a graduated scale of compensation which increases with the average revenue per message, although not in the same proportion, are provided. A "high rate" of commission applies at exchanges where the associated company does the operating and a "low rate" of commission applies at the 13 long-lines-operated offices. At certain locations the associated companies and long lines divide the operating function, and in such instances the "low rate" plus special compensation, based on work performed, applies. During the 24-year period 1913 to 1936, inclusive, the commissions paid by long lines to the associated companies amounted to \$165,170,000, and in 1930, the peak year, amounted to \$12,876,000.

Prorates are stated by the Bell System representatives as being intended to compensate the associated companies for the use of their toll lines and associated facilities in the transmission of long-lines messages and toll-operating services in connection with such lines for through switching only. Studies are made by the long lines and associated companies, usually every 3 years, to determine the prorate per message-mile to which each company is entitled.²³ These studies are based upon mileages between toll centers. Where the toll center is reached only by associated company circuits, it is assumed that prorates from the tributaries of that toll center would average the same as from the toll center, since they are calculated on an air-line basis. However, where the toll center is reached wholly or in part by long-lines circuits, additional prorates are paid to cover the haul from tributaries, to the toll center on messages delivered to long lines at the latter point, when a toll rate is in effect to cover that haul. When there is no such rate, it is generally considered that the tributary to toll center trunk is covered by the originating commission. The relation of terminating to originating messages entitled to prorate is determined in the triennial study mentioned above and is reflected in the amount allowed per originating message. Prorates are made after originating commissions have been deducted. The prorate payments made by long lines to the associated companies during the 24-year period 1913 to 1936, inclusive, amounted to \$158,337,000, and in 1930, the peak year, amounted to \$12,553,000.

²² Reversed charge long-lines toll messages are considered as originating in the territory where the collection is made.

²³ Independent connecting company toll-line facilities, utilized in the transmission of long-lines messages, are considered as part of the associated company toll line for the purpose of associated company-long lines prorate settlements. Prorate compensation to the independent connecting companies is determined and paid by the respective associated companies. Long lines originating commission payments to associated companies also include originating commissions on toll messages originated by independent connecting companies. The originating commission payment to the independent companies by the associated companies for such messages is less, however, than the amount received from the long lines by the associated companies.

(2) Payments on a combined per message-and-cost basis: Only in the city of Chicago does this special situation exist where, apparently due to franchise restrictions, the long lines department does not own or operate plant. The Illinois Bell Telephone Co. provides the plant needed for long-lines operation and bills the long lines on the basis of cost, plus return, plus a factor for administration. This arrangement covers both toll outside plant and toll central-office equipment facilities in the city of Chicago. In addition, a commission payment of 17 cents per message and 17 cents per report charge is paid, of which 12 cents supposedly covers the items included in the standard schedule of originating commissions at long-lines operated offices and 5 cents is compensation for trunks between the Chicago central offices and the toll boards.

(3) Payments on a cost basis: Certain situations exist under which the method of compensation by long lines to the associated company must be based upon cost studies.²⁴ The more important of these are discussed in the following paragraphs.

Before the introduction of combined line and recording operation (C. L. R.), it was frequently the practice in the larger cities for the associated companies to operate and own the recording board and for the line boards to be owned and operated in accordance with the ownership of the circuits handled. It appears that originally the associated companies were not specifically compensated for this recording operation of long-lines business, inasmuch as they received the same rate of commission under the so-called long-lines-operated schedule regardless of whether they did the recording. Gradually, however, a system of supplementary payments on a cost basis was introduced to cover the recording. No alteration in commission payments was made at these points. With the introduction of the combined line and recording method of operation, under which the recording and the line-operating functions on the majority of outward calls are performed by the same operator, the associated companies, in addition to recording long-lines calls at many of these points, also performed the first attempt at outward operating, and the long-lines outward operating was reduced to point-to-point and special-method operating. The scheme of supplemental payments, based upon periodical studies, was continued to cover this recording and first-attempt operating. The so-called low rate of commission has been continued, these offices still being considered as long-lines operated, although, as a matter of fact, in many cases the bulk of the operating is performed by the associated companies.

Where business is switched between long-lines circuits at associated company offices, or between associated company circuits at long-lines operated offices, the company performing such service is compensated on the basis of special-cost studies. However, where business is switched between a long-lines circuit and an associated-company circuit, the company performing the service does not receive special compensation on the theory that such costs are covered by the prorated payment.

Associated companies often maintain portions of long-lines plant and vice versa. This is especially true in the case of jointly owned toll lines. Costs are billed for actual work performed plus overheads.

²⁴ At the 13 long-lines-operated centers payments are made to the long lines department by the associated companies on a per message or a cost basis.

(4) Rentals: In many instances it may not be practical or economical for both the associated companies and long lines to own property and facilities incident to the rendition of services in the same territory. Under such circumstances, long lines rents from the associated companies, or vice versa, a certain amount of building space, central-office equipment, and outside plant facilities.

The rental arrangements between the long lines department and the associated companies are conducted on two general bases, one known as the "spare plant" basis, the other as the "reserve plant" basis. The "spare plant" basis is used in general for plant which is spare to the owning company because of anticipated future requirements or because of fluctuating loads which enable it to be placed temporarily at the disposal of the renting company. Such plant may be released by the lessee at any time or taken back by the lessor at any time upon a reasonable notice. This type of rental is adapted to cases where requirements are small or where they exist for a limited period. "Reserve plant" rentals generally cover plant designed and constructed by the owning company for joint use with the renting company or for the sole use of the renting company. However, existing plant may also be put on a "reserve" basis. The plant reserved by the lessee usually provides for its growth as well as for its present needs.

Under the rental plan, which is reciprocal, compensation for use of plant is customarily based on an application of fixed annual rates to the undepreciated book cost of the property allocated to, or reserved for, the use of the renting company. The component elements generally comprising the fixed annual rates are interest at 8 percent,²⁵ depreciation, insurance, administration, and taxes. While evidence indicates that, in some instances, the rental arrangement consists of a flat rate per item of plant for a designated period, such rates are apparently formula determinations based upon the application of fixed annual charge rates to average investment, original cost, or other valuation of the facilities either originally or currently covered by the quoted rate.

The magnitude of these rental transactions is indicated by the fact that during the 24-year period 1913 to 1936, inclusive, the long-lines rental payments amounted to \$114,475,000, and its rental receipts amounted to \$56,025,000.

Significance of commission and prorate payments.—The long-lines originating commission and prorate payments to the associated companies during the 24-year period 1913 to 1936, inclusive, amounted to \$165,170,000 and \$158,337,000, respectively, or a total of \$323,507,000. The significance of these payments to the associated companies and the long lines department during that period is indicated by the following tabulation:

	Asso- ciated com- panies	Long lines depart- ment
Percent of gross revenues represented by: ¹		
Originating commissions.....	1. 11	12. 56
Prorates.....	1. 07	12. 04
Commissions and prorates.....	2. 18	24. 60

¹ The long lines department gross revenues used in this computation exclude the originating commissions and prorates. If the commissions and prorates were included in gross revenues, the percentages represented by these commissions and prorates would be, respectively, 10.08 and 9.67 percent.

²⁵ A reduction in the interest rate from 8 to 7 percent was made during 1936 in the rental arrangements between long lines and the Mountain States Telephone & Telegraph Co., Northwestern Bell Telephone Co., Southwestern Bell Telephone Co., and Southern New England Telephone Co.

It is apparent from the above table that changes in the amount of commissions and prorates will affect long-lines revenues to a proportionately greater degree than the associated companies.

The history of the originating commission schedules and the adequacy of the payments as indicated by various cost studies prepared under the direction of the American Co. and the associated companies are presently discussed.

(1) *History of commission schedules.*—Since 1881 the schedules of originating commissions have been changed on 8 different occasions, each change increasing the associated companies' proportionate share of the toll-message revenues. All changes have been initiated by the American Co. or its predecessor company. The schedules have provided a uniform basis of settlement for all of the associated companies and have not recognized any cost differentials between different companies, and not until 1909 was recognition given in the schedules to the fact that at some points the toll operating was performed by the associated companies and at others by long lines. In 1918 an increase in commissions was made, ostensibly on account of rising costs due to war conditions. The commissions paid on messages originating out of associated-company-operated offices were raised considerably more than those on messages originating at long-lines-operated offices. This difference in treatment was in recognition of the fact that studies of previous years had shown the commissions on associated-company-operated business to have been more open to question as to adequacy than those of long-lines-operated business. The studies and recommendations which had been made by the American Co. officials in the years from 1920 to 1924 resulted in no change in originating commissions. The change in commission schedules in 1925 represented an alteration in the form of computation of payments, but was not designed to change the share of the associated companies. In 1926 important increases were made in the commission schedules on associated-company-operated messages, but there appears to have been no specific relationship between costs and those increases. Changes in 1927, 1936, and 1937 were made by the American Co. designed to protect the associated companies against losses in originating commission revenues from a given number and character of messages after long lines toll rate reductions.

Although the cost to the associated companies of their part of the plant investment and operating expenses required to handle long-lines business has not been used directly as a basis for the division of revenues except in the special situation at Chicago described above, many cost studies have been made by the American Co. since 1909 for the purpose of determining the adequacy of the payments to the associated companies as a whole. There follows a partial summary of the cost studies made by the American Co. and the associated companies since 1927. Although the American Co. and the associated companies began making cost studies in about 1909, only those studies made since 1927 are sufficiently comprehensive and recent to be of importance in considering the adequacy of the present originating commission payments.

(2) *Summary of cost studies since 1927.*—The operations and engineering department of the American Co. found, as a result of a study, that in 1928 the average commission payment per associated

company operated originating message was \$0.3750 and that the expenses incident thereto, including interest on an assigned plant investment, were \$0.3116, leaving a margin per message of \$0.0634, which is equal to 20.3 percent of costs including interest. In a study made in 1933 it was found that the commission per message was \$0.3800, the cost \$0.3629, and the margin \$0.0171; or 4.7 percent of total costs. The items of cost included in these two studies are not strictly comparable. The important point is that in 1928 the operations and engineering department found that the associated companies' commission payments provided compensation more than 20 percent in excess of all assigned costs.

The operations and engineering department did not make any specific findings on long-lines-operated business. However, the costs estimated for the points at which the long lines department did some operating showed costs of about 7 cents applicable to such messages as against commissions of about 13 cents, leaving a margin of 6 cents per message.

At about the same time that the operations and engineering department of the American Co. was making the study in 1928, described above, the results of which indicated that the associated companies were receiving commissions substantially in excess of costs estimated to be allocable thereto including interest on allocated investment in plant, certain associated companies were making similar studies which showed opposite results. These studies were made by the New York Telephone Co., the New Jersey Bell Telephone Co., the Bell Telephone Co. of Pennsylvania, and the New England Telephone & Telegraph Co. Results of operations for 1928 and 1929 were used, and the studies were submitted to the long lines department and in some cases to the operations and engineering department of the American Co. Certain changes, mostly of a minor character insofar as their effect on results was concerned, were made as a result of the comments of the American Co. but, generally speaking, the studies were finally accepted, but no change was made in the commission schedules of these companies.

The following tabulation gives a summary of the results of the studies made by associated companies as finally revised in accordance with the comments of the American Co.:

Item	Per message			
	New York	New Jersey	Bell of Pennsylvania	New England
Commercial expense	\$0.005	\$0.0967	\$0.1041	\$0.0412
Switching and recording trunk expense .....		.0085	.0604	
Plant expense .....	.101	.1685	.0775	.1204
Traffic expense .....	.184	.2246	.1291	.1600
Subtotal .....	.380	.4223	.3111	.3276
License payment expense .....	.007	.0069	.0052	.0056
Miscellaneous expenses .....	.022		.0194	.0217
Grand total .....	.409	.4292	.3357	.3549
Average commission payment .....	.360	.3441	.3446	.3651
Gross profit (or loss)	-.049	-.0851	.0089	.0102

It will be noted that although commission payments per message in these four companies varied between 34 and 36 cents, a maximum range of 2 cents, their expenses, including interest on an assigned plant investment, varied from 34 to 43 cents, a maximum range of 9 cents per message. Despite the extreme variation in the costs of handling long-lines messages revealed by these studies, no action was taken to provide commission schedules for individual companies consistent with their individual costs.

During the period covered by these studies these four companies originated 32 percent of the messages and received 30 percent of the commissions paid on associated company-operated messages. The New York Telephone Co. studies showed that it was losing nearly 5 cents per long-lines message and the New Jersey Bell Telephone Co. studies showed that it was losing over 8 cents per message. The New England Telephone & Telegraph Co. and the Bell Telephone Co. of Pennsylvania were receiving a margin in excess of costs equivalent to about 1 cent per message; yet the operations and engineering department had concluded that on all long-lines business operated by the associated companies they had a margin in excess of costs of over 6 cents. If this was correct, then the average margin for the other companies must necessarily have been greatly in excess of 6 cents per message.

On the basis of 1928 operating results the American Co.'s study showed that the associated companies received as a whole about \$2,200,000 more than their costs, including interest.

The bases of all of the cost studies mentioned above were in conformity with the terms contained in the license service contract which specifies that no part of the originating commission payment is to compensate the associated companies for facilities used and services furnished in connecting the subscriber's station and the toll side of the exchange switchboard. The effect of including an allowance to cover such costs is discussed subsequently in this chapter.

Joint use of facilities for various classes of toll services.—The several different classes of toll services furnished by the Bell System and the relative importance of each from a revenue standpoint have been discussed previously in this chapter. In many instances these several services utilize the same facilities either simultaneously or at different intervals. The accounting methods of the Bell System do not provide for a separation of the plant and expenses incident to the conduct of these various toll services. Investigation indicates that the Bell System has made no consistent or constructive effort to apportion operating expenses and plant investment as between various classes of service rendered but has been satisfied to obtain from all services a satisfactory return upon the total investment or value of its plant.

Allocation of Investment and Expenses and Classification of Revenues Under the Board-to-Board and Station-to-Station Bases for Stating Rates.

The associated companies furnish exchange, and both interstate and intrastate toll services. Much of their plant and equipment is used jointly for these services. The accounting practices of these companies do not provide for a reasonably accurate segregation of plant investment and expenses between toll and exchange and furthermore they do not provide for any segregations between interstate and

intrastate toll services.²⁶ Consequently a comparison of the relative profitableness of the associated companies' exchange, intrastate toll and interstate toll operations cannot be made directly from the current accounting records. A discussion of the methods of obtaining these interstate results and their importance in the problem of regulation follows.

Under the presently effective license service contracts, as interpreted by the American Co., the message toll rates paid by the user "cover the use of the toll switchboard, toll trunking and other toll terminal facilities (operating, billing, and collecting, etc.) of its exchange area (in addition, of course, to the use of the toll circuit between the exchanges involved in the communication) but not the use of the exchange plant and facilities lying between the exchange station and the exchange switchboard, both inclusive, for which excepted facilities he has paid or will pay in his regular monthly exchange service charges."²⁷ This basis of toll-rate making is termed the "board-to-board" basis.

As an alternative to the board-to-board basis of stating rates, there is the so-called station-to-station basis, under which the toll rates are intended to include compensation for the use of facilities and for services necessary in the transmission and reception of toll messages from the subscriber station to subscriber station. Under this basis, the exchange rates are intended to cover only compensation for the use of facilities and services necessary in transmitting and receiving messages which originate and terminate wholly within the exchange-rate area.

During the period 1909 to 1918 certain associated companies contended, while negotiating divisions of revenue, with the American Co., for the use of the station-to-station basis of stating rates and in this connection also contended that certain costs arising from the use of local switchboard circuits and subscribers' stations were properly attributable to interstate toll-message service and should be borne by the long lines department and not accounted for as a part of the costs incurred on account of local exchange telephone service. However, in recent exchange-rate cases, the Bell Telephone companies (except the New York Telephone Co.) have consistently contended that both intrastate and interstate toll rates should be stated on the board-to-board basis. Most commissions and local regulatory bodies recently have used or advocated the use of the station-to-station basis of stating telephone rates. The United States Supreme Court in the *Chicago rate case*²⁸ determined the station-to-station character of interstate communications. If, under these circumstances, interstate rates were made on a board-to-board basis it would result in delegating to State regulatory bodies the duty of determining the magnitude of the charge for that portion of the interstate communication provided by the facilities between the subscriber's station and the toll side of the exchange switchboard.

The necessity of developing special information for use in certain types of confiscation cases and rate proceedings, where it is alleged that the rates for one or more classes of service are unreasonable

²⁶ Such segregations are not required by the effective Uniform System of Accounts for Telephone Companies.

²⁷ Memo attached to letter dated November 26, 1934, from American Telephone & Telegraph Co. to Federal Communications Commission.

²⁸ *Smith vs. Illinois Bell Telephone Co.*, 282 U. S. 133.

by comparison with the rates for other classes of service, has been recognized since at least the time of the decision in the *Minnesota rate cases*²⁹ but until the decision in the *Chicago rate case* apparently did not, in a telephone case, become one of the specific points on which the decision could turn. In its decision in the *Chicago case*³⁰ in 1930 the United States Supreme Court first pointed out that the requirements set forth in the *Minnesota rate cases* with respect to the separation of investment and expenses between interstate and intrastate service was applicable to telephone facilities as well as to railroad facilities. Under present telephone accounting practices, the problem of separating the property investment, revenues, and expenses between interstate and intrastate services is presented, regardless of whether the board-to-board or station-to-station basis of toll-rate making is used.³¹

Allocation of fixed capital investment and operating expenses.—Since the beginning of the industry the Bell Telephone companies have maintained fixed capital accounting records. The companies' accounting records were without Federal regulation until 1913. From 1913 to 1936, inclusive, they were maintained in accordance with the Bell System's interpretation of rules prescribed by the Interstate Commerce Commission, and since January 1, 1937, in accordance with rules prescribed by the Federal Communications Commission.³² The rules prescribed by the Interstate Commerce Commission, and in effect until January 1, 1933 (except for those applying to smaller telephone companies), provided that investments in outside plant should be classified as between exchange and toll on a "principal use" basis, but did not provide that investments in land, buildings, central-office equipment, general equipment, and station apparatus should be classified as between exchange and toll. The meaning of "principal use" has been interpreted differently by the telephone companies. For example, some companies interpret it to mean predominant use, some as the purpose for which the property was originally designed, while others have used both of these interpretations. Some companies classify all plant within the exchange area as exchange plant, except certain units used exclusively for toll service, and all lines outside the exchange area carrying any toll circuits as toll. In 1933 the Uniform System of Accounts was revised by the Interstate Commerce Commission to eliminate the required classification of investments in all classes of plant as between exchange and toll. When the Federal Communications Commission issued its superseding Uniform System of Accounts³³ in 1935, this practice was continued. Although separate exchange and toll classifications of outside plant accounts and of certain operating expense accounts have been provided by the accounting methods of Bell System companies, they are of little practical value from a regulatory standpoint since they are not sufficiently detailed and are not considered to be on a uniform or proper basis.³⁴

Fundamentally the method pursued in separation studies involves allocation of plant and operating expenses, insofar as possible,

²⁹ *Minnesota rate cases*, 230 U. S. 352.

³⁰ 282 U. S. 133.

³¹ The legal status of the separation problem is discussed in appendix 11.

³² Telephone Division Order No. 7-C.

³³ Telephone Division Order No. 7-C.

³⁴ The classification was not made on a uniform basis with respect to all of the Bell System companies.

according to actual use for exchange, intrastate- and interstate-toll services. Plant devoted exclusively to and operating expenses incurred solely on account of one or another of these three classes are directly separable. Plant and operating expenses used or incurred jointly for one or more of these classes of service are apportioned on the basis of relative time in use or the relative amount of operating labor involved. The methods so far employed by the associated companies make no allowance for possible differences in the value of the service rendered either to the company or to the user. Typical studies made recently by the associated companies involved, first, a comprehensive survey of the entire plant to determine the investment in the parts used exclusively for exchange services, exclusively for toll services, and jointly for both exchange and toll services on the basis of "actual use." By "actual use" is meant space occupied or physical load carried. The total exchange plant thus obtained was then further apportioned between toll and exchange on the basis of "time in use." By "time in use" is meant the holding time (usually expressed in call-seconds or call-minutes) that the facilities were used for each of the classes of services. The total toll plant, including the portion of the exchange plant apportioned to toll use, was then divided between interstate and intrastate services. The toll plant was divided on an "actual use" basis between that used exclusively for interstate services, exclusively for intrastate services, and jointly for both interstate and intrastate services. The jointly used portion of toll plant and the exchange plant allocated to toll were then apportioned between interstate and intrastate toll services on the basis of "time in use." With respect to land, buildings, equipment and exchange plant allocated to toll, "time in use" was usually expressed in message minutes. With respect to toll-line plant, "time in use" was expressed in message-minute-miles.

Expenses related directly to plant investment, such as depreciation and maintenance, have been divided between local exchange, interstate toll and intrastate toll in the same proportion as the class of property with which they were incurred. Traffic expenses were apportioned among the three services on the basis of the number of operator work units consumed in handling each of the classes of service. In most instances commercial expenses were segregated among the three services on the basis of actual cost studies. Ordinarily composite percentages, based upon property and other expense allocations, form the basis for dividing general and other operating expenses. Telephone company accounting rules require that revenues derived from local exchange and toll services be kept separately. No provision is made for the division of toll revenues between interstate and intrastate. In separation studies, therefore, it is necessary to separate toll revenues between interstate and intrastate. The methods of allocation outlined above are those generally used by associated companies to allocate the exchange, intrastate toll and interstate toll investments and expenses on the station-to-station basis. If the board-to-board basis of stating rates is used, all of the "actual use" allocations outlined above must be made, but the apportionments of exchange plant and expenses between the exchange and toll uses on the basis of "time in use" and the further allocation of this plant and these expenses between interstate and intrastate toll services is unnecessary.

It has been the practice of the associated companies in preparing station-to-station separation studies to allocate a portion of the local exchange service revenues to interstate and intrastate toll. Such allocations have been made on the theory that toll rates had been made upon the board-to-board basis and that, therefore, the local exchange rates included compensation for connecting the subscribers' telephones to the toll board. The percentage of exchange service revenues transferred to intrastate and interstate toll is usually based upon the respective time in use of subscribers' lines for exchange, intrastate toll and interstate toll services, or of such amount as will equalize the rate of return on the exchange property used for exchange and for toll purposes.

The result of such apportionments of exchange revenues to toll service is to provide a measure of the adequacy of exchange or toll rates on the board-to-board basis only. In order to provide a basis for fixing rates in accordance with the station-to-station method, the exchange service revenues as carried on the company's books must be associated with the property investments and expenses allocated and apportioned to exchange service on the station-to-station basis and similarly, toll revenues as carried on the books must be associated with the plant investment and expenses apportioned or allocated to toll on the station-to-station basis.

Effect of separation of interstate and intrastate property and expenses.—The station-to-station basis of apportionment always has the effect of decreasing the exchange rate base and expenses and of increasing the toll rate base and expenses as compared with the board-to-board basis. The extent of these effects upon exchange, intrastate toll and interstate toll property and expenses depends to a considerable extent upon the relative volume of toll and exchange business and upon the relative amounts of plant and equipment owned by the company and used in the rendition of these services.

For example, studies made by the Wisconsin Telephone Co.³⁵ indicate that on a board-to-board basis, the toll plant amounted to 29 percent of the total plant investment, whereas on the station-to-station separation basis, the toll investment amounted to 31 percent of the total. This amounted to a 7.5-percent increase in the toll investment but represented a decrease of but 3 percent in the exchange investment. In Michigan,³⁶ the intrastate toll plant amounted to 19 percent of the total investment and because of this smaller proportion to total plant the effect of the station-to-station separation on that class of service was greater than in Wisconsin. In Wisconsin the intrastate toll expenses were increased 9 percent by the station-to-station separation, whereas in Michigan they were increased 14 percent. These results were based upon depression period traffic which shows a lower ratio of toll usage to exchange usage than would ordinarily be experienced. Therefore, in a normal year, the effect of a station-to-station apportionment would be more accentuated than in the above examples.

The effect of the station-to-station method of apportionment on the interstate toll expenses in Wisconsin was about the same as on intra-

³⁵ *Public Service Commission of Wisconsin*, case No. 2-U-35, exhibit C-296.

³⁶ *Michigan Bell Telephone Co.*, 10 P. U. R. (N. S.) 149.

state toll business. However, a special study ³⁷ prepared by the Wisconsin Telephone Co., based on 1934 data, indicated that on an overall basis a change to the station-to-station method from the board-to-board method resulted in an increase in intrastate toll expenses equal to 9.19 percent of the gross intrastate toll revenue, while the comparable increase in the case of Wisconsin Co.'s expenses incurred on account of long-lines business was only 3.23 percent of the amount billed on account of long-lines messages originated in Wisconsin.

The American Telephone & Telegraph Co. in 1933 made an attempt to compute, based on 1932 data, the additional costs which would be chargeable by the associated companies against their commissions on long-lines business if the commissions were based on the station-to-station method instead of the board-to-board method of stating rates.³⁸ These additional costs represent the costs to the associated company of handling long-lines toll business between the subscriber's station and the toll plant. Two such studies were made, one for the system as a whole and one for the Wisconsin Telephone Co. The system study indicated that the additional cost would be nearly 11 cents per message at associated company operated offices. For the Wisconsin Co., the American Telephone & Telegraph Co. estimated an additional cost of about 9 cents per message. The estimated additional costs as percentages of the associated companies' commissions on long-lines business were for the system 28.8 percent and for the Wisconsin Co. 25.8 percent. Similar information is obtainable from studies prepared by the Wisconsin Telephone Co.³⁹ and by the Southern Bell Telephone Co.⁴⁰ for the States of Alabama, Florida, Louisiana, and North Carolina from segregation data developed in recent rate cases. The Wisconsin Co. study, based on 1934 data, indicates that the additional cost due to use of the station-to-station method, would amount to 12.6 percent of commissions on long-lines business, and the corresponding figures for the Southern Bell Co., also based on 1934 data, varied from 9.4 to 16.6 percent for the different States, with an average of about 11.7 percent of commissions on long-lines business. The existing commissions are considered by the American Telephone & Telegraph Co. as intended to compensate the associated companies for their services on long-lines business originating and terminating in their territories, including billing and collecting, use of plant and operating expenses on a board-to-board basis.

A discussion of court and commission decisions involving the questions of allocation of property, revenues, and expenses, and the relative merits of the station-to-station and board-to-board bases for stating rates, prepared by the investigation staff, will be found in appendix 11, page 7.

³⁷ See binder received on Feb. 14, 1936, from the Wisconsin Telephone Co. entitled "Data Requested by Federal Communications Commission—Revenues, Expenses, and Net Income and Property of Wisconsin Telephone Co. Apportioned to Message Tolls and Special Service to and from the American Telephone & Telegraph Co. and to Property Rented to the American Telephone & Telegraph Co."

³⁸ American Telephone & Telegraph Co. Operation and Engineering Department Study No. 329 (1933 revision, No. 2-D and No. 3-D).

³⁹ See footnote 37.

⁴⁰ See binders transmitted to the Federal Communications Commission as described in letter dated Apr. 28, 1936, from Mr. K. S. McHugh, assistant vice president of the American Telephone & Telegraph Co., to the Federal Communications Commission.

SECTION 2. INTERNATIONAL POLICIES AND PRACTICES

In addition to the various long-lines services previously described, the long lines department was, on June 30, 1937, furnishing overseas telephone message service from the United States to 66 countries and territories. Bell System companies also furnish ship telephone service of two classes: (1) To passenger vessels on the high seas through coastal radio stations, and (2) to certain classes of vessels through coastal harbor radio stations. Ship telephone service was established on December 8, 1929, the *Leviathan* being the first vessel equipped for this service. As of June 30, 1937, there were 20 large passenger vessels operating in the northern trans-Atlantic service equipped for communication with the coastal stations of the Bell System. On the same date there were 7 coastal harbor stations operated by Bell System companies largely for communication with vessels in the vicinity of the respective harbors at which the stations were located. Ship telephone service rendered by the American Co. produced less than 2 percent of the total revenues from overseas telephone service rendered by the long lines department for the period 1928 to 1935, inclusive, as shown on table 59, and will not be further discussed herein.

Origin and Development of Transoceanic Telephone Service.

During 1915 various technical developments necessary for the realization of transoceanic radiotelephone service were experimentally employed by the engineers of the Bell System, and successful transmission in one-way telephony was achieved up to distances of approximately 3,000 miles. These tests employed a vacuum-tube transmitter and were conducted from the Navy radio station in Arlington, Va., to Panama, California, Hawaii, and the Eiffel Tower in Paris. The World War interrupted a continuance of these experimental developments, but they were resumed after its termination. A high-power transmitter was installed at Rocky Point, Long Island, and in 1924 one-way transmission tests were carried on between the United States and England. England was apparently chosen as the experimental terminal, first, because of its geographical location; second, because of the small number of transmission difficulties involved; and third, because of the large volume of other classes of communication between the United States and England. As a result of this experimentation, which was highly successful, a committee of the British Post Office was appointed to investigate the possibility and business potentialities of such a commercial radiotelephone service. This study resulted in an undertaking by the British Post Office to build a transmitting station of a size and character adequate for trans-Atlantic radiotelephony.⁴¹ January 7, 1927, marks the beginning of transoceanic radiotelephony on a commercial basis. A contract was entered into on July 1, 1927, retroactive to January 7, 1927, between the British Post Office and the American Co., under the terms of which this service was inaugurated between New York and London. Later this service was extended to include, on the American side, all of the United States; and on the European side, all of Great Britain and, in successive steps, most of the countries of continental Europe and other countries accessible through the use of facilities terminating in London.

⁴¹ This station was originally located at Rugby, England, but later the experiments were conducted from a station at Wroughton, England.

Technique of operation.—The primary requisite for radiotelephony is a radio channel. In the early days of radiotelephonic experimentation—before the first commercial line was established and before the Federal Radio Commission was created—the Department of Commerce allotted radio frequency channels to the American Co. Upon the organization of the Federal Radio Commission in March 1927, that agency took over the function of allocating radio channels, and the radiotelephone stations in the United States began to operate under licenses from that Commission. In turn, the Federal Communications Commission, when it succeeded the Federal Radio Commission, took over this function. At present licenses for radiotelephone stations in the United States are granted for 1-year periods, and the renewals are subject to the approval of the Federal Communications Commission.

The overseas radiotelephone service conducted by the long lines department is furnished by means of long-wave and short-wave radio channels combined with the necessary land line or other facilities on each end of the radio link. Both high- and low-frequency radio channels are employed. Since the propagation characteristics of radio waves vary with frequency, the wave length best suited for transmission is used, depending upon the conditions obtaining over the desired transmission path. Messages are not transmitted over a combination of both long- and short-wave radio channels, but over either, as conditions and circumstances dictate. The procedure followed in completing a call from any point in the United States which is destined for some point in continental Europe may be described thusly: (1) From the point of origin the call is transmitted over regular long-distance telephone circuits to the long-lines offices in New York City; (2) in a special department of long lines in New York, facilities are employed to separate the talking and listening elements of each two-way communication over the radio link. At this point the spoken words of the radiotelephone message undergo a most interesting, as well as important, transition, commonly referred to as "scrambling." Scrambling consists, as the name signifies, in transforming the spoken words of the telephone message into an unintelligible series of sound impulses, thus decreasing the possibility of the message being understood if intercepted; (3) the talking part of the message is now forwarded over long-distance telephone lines to the transmitting station at Lawrenceville, N. J., from which point it is transmitted to the receiving station at Rugby, England, over a radio channel; (4) from Rugby, the message is transmitted over land lines to the long-distance office of the British Post Office in London, at which point it is "unscrambled." It is then forwarded over the long-distance facilities of the British Post Office via submarine cables and land lines to its continental destination;⁴² (5) a similar procedure takes place on the called party's answer from continental Europe to the United States,⁴³ except that the British transmitter is located at Rugby, England, and the American receiver is located at Netcong, N. J.

Physical facilities.—The toll operating necessary to utilize the long-wave and short-wave radio channels employed in furnishing overseas

⁴² It is possible to relay these messages from London to certain countries, such as Dominion Provinces, via radio channels.

⁴³ Radiotelephone circuits may employ the same frequency band for transmission in 2 directions, or they may employ separate bands. The present long-wave telephone circuit between New York and London is of the first type, while most existing short-wave circuits are of the second type.

telephone service is carried on at three focal points in the United States, namely, New York, Miami, and San Francisco:⁴⁴

(1) The New York terminal, which provides service to Europe, Bermuda, Brazil, Argentina, Peru, and other points reached via these countries consists of—

(a) Transmitting station at Rocky Point, Long Island, and its associated receiving station at Houlton, Maine; and

(b) Transmitting station at Lawrenceville, N. J., and its associated receiving station at Netcong, N. J.

(2) The Miami, Fla., terminal consists of a short-wave transmitter station at Opa Locka and an associated receiving station at Hialeah, which provides service to Nassau, in the Bahama Islands, and to Venezuela, Colombia, Central America, and the West Indies.

(3) The terminal at San Francisco, Calif., which is served by a short-wave transmitting station at Dixon, Calif., and its associated receiving station at Point Reyes, Calif., provide service to Hawaii, Japan, Manila, Java, and China.

Transoceanic telephone rates and revenues.—The territories included in the scope of long lines radiotelephone service are divided into zones, and the basic rates for particular zones are established by agreements with the foreign administration, or administrations, in the respective territories. The revenue is divided equally between the American Co. and the foreign administration, or administrations, on business between basic zones.⁴⁵ Revenue derived from additional zone charges is credited to the side on which the zone charge is incurred.

The gross revenue and long-lines' share of radiotelephone message revenue segregated into the more important areas, together with an analysis of long lines' share, by years, from 1928 to 1935, inclusive, is shown on table 59, page 379. These data show that measured on a revenue basis, the business with or through England to the European continent constitutes approximately 90 percent of long lines' overseas business.

While there has been a steady growth in the number of transoceanic telephone messages during the past 6 years, there has not been a corresponding increase in the revenue derived therefrom. Expressed in terms of trans-Atlantic messages, there were 14,639 in 1930 as against 24,488 in 1936. This increase is not reflected in revenue growth, due to the fact that there have been a number of reductions in rates over this period. The original rate for a 3-minute radiotelephone message from New York to London was \$75, which rate did not differentiate between day, night, and Sunday service. Since this original rate of \$75 for 3 minutes, there have been reductions successively to \$45, as of October 1, 1929, \$30 on September 1, 1934, and \$21 on July 1, 1936, which is the current tariff. Reduced night rates became effective in September 1934, and reduced rates for Sunday became effective in July 1936. At the present time the 3-minute day rate is \$21 and the 3-minute night and Sunday rate is \$15.

⁴⁴ Included in long lines total assets as of December 31, 1935, were investments of over \$2,400,000 in the securities of, and advances to, the Trans-Pacific Communication Co., Ltd. (this company was dissolved as of September 9, 1936, and its assets assigned to the American Co.) of San Francisco, Calif., and the Eastern Telephone & Telegraph Co., Inc., of Halifax, Nova Scotia, for furnishing transoceanic communication services. The common stock of these companies at December 31, 1935, had a combined par value of \$100,000, all of which was owned by the long lines department. These companies apparently were organized originally as separate corporations to permit long lines participation in the development of transoceanic telephone service without legal difficulties and to avoid subjecting the entire business of the American Co. to certain tax laws and risks of a new and untried business.

⁴⁵ The division of the radio link portion of the revenue on ship-to-shore radiotelephone business is on the basis of one-third to the ships and two-thirds to the American Co.

Data were not available to show the operating expenses applicable to, and the net earnings resulting from, the various revenues shown in table 59.

TABLE 59.—*Long-lines operating revenues, overseas radiotelephone service revenues, message tolls, years 1928 to 1935, inclusive*

Gross amount:	
Trans-Atlantic.....	\$8, 570, 668. 71
Trans-Pacific.....	283, 175. 43
South American.....	760, 670. 61
Bermuda.....	96, 734. 50
Caribbean.....	79, 732. 38
Ship-to-shore.....	181, 419. 45
Total.....	9, 972, 401. 08
Other companies' share (deductions for zone charges, commissions, prorates, etc.):	
Trans-Atlantic.....	4, 628, 176. 27
Trans-Pacific.....	178, 615. 84
South American.....	401, 988. 56
Bermuda.....	52, 703. 04
Caribbean.....	46, 922. 91
Ship-to-shore.....	73, 052. 25
Total.....	5, 381, 458. 87
Long-lines revenue, radio haul (before uncollectible deduction):	
Trans-Atlantic.....	3, 942, 492. 44
Trans-Pacific.....	104, 559. 59
South American.....	358, 682. 05
Bermuda.....	44, 031. 46
Caribbean.....	32, 809. 47
Ship-to-shore.....	108, 367. 20
Total.....	4, 590, 942. 21

Analysis, by years, of long-lines' share

1928.....	\$463, 696	1932.....	\$514, 381
1929.....	736, 419	1933.....	549, 429
1930.....	581, 292	1934.....	517, 749
1931.....	665, 560	1935.....	562, 416

Source: Memorandum of June 11, 1936, from American Telephone & Telegraph Co., and contained in Federal Communications Commission files.

Elimination of Potential Competition Through Patent Licensing Agreements.

The control of the American Co. in the field of two-way transoceanic telephony through patents is based upon its 1926 and 1932 license agreements with the radio group.⁴⁶ Stated briefly, the radio group received, under the provisions of the 1920 contract, exclusive patent licenses to manufacture and operate transoceanic radio stations which would be available to the Bell System to furnish the transoceanic telephone service in connection with its land lines. It was provided further that in the event the radio group did not make such stations available, the Bell System might construct and operate its own transoceanic stations.

⁴⁶ These license agreements are discussed in detail in ch. 8.

Under the 1926 agreement the Bell System received exclusive licenses under the patents of the radio group to manufacture and operate apparatus and equipment in the field of two-way radiotelephony for transoceanic purposes, for use in continental United States, and non-exclusive licenses to manufacture and sell stations for such purpose engaged in cooperating with it in giving the public a transoceanic telephonic service. It granted no licenses to the radio group for this purpose.

Under the 1932 cross-license agreement, the Bell System received nonexclusive licenses, including the right to grant nonexclusive licenses, under the patents of the radio group, in connection with transoceanic two-way radiotelephony. It granted no licenses in this field to the radio group.

As a result of these cross-licensing agreements, the American Co. enjoys a monopoly in two-way radiotelephony from the United States to all foreign countries. The American Co. is the only company in the United States providing two-way radiotelephone communication with foreign countries in public service.⁴⁷

Extensions of service via London.—Following the inauguration of trans-Atlantic radiotelephony, requests were received from the administrations of several European countries to participate in the service by having it extended to the continent by means of wire lines. Most of these requests were made to the British Post Office, but some few of them were made to the American Co. In either event, the requests were answered in the negative until the initial extension was made to Belgium in January 1928. After the first extension to Belgium in 1928, 26 extensions to European countries were effected up to June 30, 1937.

The evidence indicates that the British Post Office assumed full authority for the refusal to extend this service to continental Europe and other countries reached by facilities via London, and that the American Co. did not become a party to such negotiations until after the decision was made. A review of the contract⁴⁸ between the American Co. and the British Post Office discloses that there are no provisions in the contract covering such extensions, clause 9 being confined to extensions to points in Great Britain and Northern Ireland and the United States, which extensions shall be agreed upon by parties to the contract. Inasmuch as extensions of this service from the United States to European countries necessitated another contract between the British Post Office and the participating European administration, and involved problems of administration and traffic of more primary importance to the British Post Office than to the American Telephone & Telegraph Co., the latter accepted the decision of the Postmaster General (British Post Office) as to whether or not the technical situation would permit satisfactory extension of the service to a particular continental country. However, evidence shows that the American Co. did suggest that "in each case the arrangement for the extension of the present service to a continental country be subject to termination upon our giving to the Postmaster General 1 year's notice of intention to establish direct service between that country and the United States." While the first reaction to the control exercised by the British Post Office in the extension of this service from the United States to continental Europe might be

⁴⁷ The U. S. Army maintains two-way radiotelephone communication between Seattle, Wash., and Alaska, for departmental services.

⁴⁸ Contract of July 1, 1927.

unfavorable, by and large, no serious controversies appear to have developed as a result of this arrangement.

Modification of Policy Refusing Direct Service.

In July 1929 a preliminary plan for world-wide radiotelephony was formulated by the American Co. Substantially, this plan involved the establishment of additional facilities for radiotelephone communication and also suggested the establishment of direct service to points in continental Europe. The proposal considered was the suggested construction of two additional long-wave channels at Houlton, Maine, one of which would replace the existing long-wave channel between New York and London, the other to be used for increased traffic. This tentative plan of extension was no doubt prompted by the expressed inquiries of several European countries concerning the possibility of direct radiotelephone service with the United States. Radiotelephony was increasing in popularity, and the desire of foreign countries for direct service no doubt reflected either the feeling of national prestige, necessity for privacy, or a desire to circumvent the dependency and the possible censorship of the British Post Office. The British Post Office opposed direct connections between the United States and other foreign countries. After a considerable exchange of correspondence on the subject, the plan appears to have been abandoned.

There was a second proposal for augmenting the facilities available for trans-Atlantic telephone service between the United States and Great Britain, which considered the construction of a trans-Atlantic cable. The American Co., cooperating with the British Post Office, entered into protracted negotiation and experiment with this trans-Atlantic cable, but so many economic and financial differences developed in the arrangement that the idea was definitely abandoned.

Direct service between England and Canada.—The provisions of the contract,⁴⁹ as stated in clause 18, permit the British Post Office to extend service to the Dominion of Canada, but neither this clause, nor any other clause, provide for a direct service from England to Canada. It should be mentioned at this point that the British Post Office operated a rather extensive network of direct radiotelephone channels to its various dominions, but service with Canada had been routed through the American Co. at New York. In August 1929 the British Post Office indicated to the American Co. the possibility that national sentiment in Canada might necessitate a direct service, as against the present procedure of routing this business through the American Co. at New York. If such a plan were subsequently executed, it would be desirable for the British Post Office to arrange with the American Co. to use the present existing direct channel between London and New York as an alternate channel from London to Canada, in the event of interruptions to the proposed direct channel from London to Canada. At first, the American Co. did not favor the idea of using the existing trans-Atlantic channel as an alternate route between Canada and Great Britain. The American Co. agreed finally to make an exception and allow full alternative routing arrangements over the New York-to-London circuit, provided that in case of the establishment of direct circuits between the United States and continental Europe at some future date, similar

⁴⁹ Contract of July 1, 1927.

alternative routing privileges would be allowed the American Co. by the British Post Office. The British Post Office agreed to this stipulation. The nature and volume of the correspondence on this matter of alternative routes indicates that the agreements were entered into with considerable reservation by both parties. As a matter of record, the direct service between Canada and Great Britain was established on July 11, 1932.

Direct service between the United States and France.—After establishment of radiotelephone service to England, various European administrations approached the American Co. concerning direct radiotelephone circuits between their countries and the United States. Among the countries desiring direct telephone circuits were Switzerland, in 1929; France, in 1931; Germany, in 1934; and Italy, in 1935. However, all suggestions for direct circuits to the continent of Europe were evaded by the American Co. on the ground, generally, that such direct circuits were not deemed to be warranted at that time for economic reasons.

In 1935, the French Government took the matter up through the then United States Ambassador to France, who, in turn, negotiated with the American Co. The American Co. again stated that it was not advisable to establish such a direct circuit. The American Ambassador to France communicated the desire of the French Government for direct telephone service between France and the United States to the Department of State at Washington, D. C., and that Department in turn referred the request to the Federal Communications Commission for consideration and action. The matter was discussed with the Secretary of the Navy and the Secretary of War both of whom were strongly in favor of the direct circuit. In a special notice⁶⁰ to the American Co., dated June 27, 1935, the Federal Communications Commission stated, in connection with consideration of applications of the American Co. for renewal of its licenses covering frequencies used for the New York-London circuits, that the Commission would consider also the matter of direct radiotelephone communication between the United States and France, and would hear testimony and evidence thereon. In the conferences and negotiations that pertained to this direct circuit to France the American Co. set forth its objections.⁶¹ Likewise, the British Post Office requested an opportunity for full presentation of its case before the Commission to set forth its objections to the arrangement of direct service to France.⁶²

After exhaustive consideration of all factors by the Federal Communications Commission, it requested⁶³ the American Co., on August 16, 1935, to conclude, with all possible expedition, the necessary negotiations in Paris and London and that such negotiations or copies of all contracts and agreements relating to the proposed direct circuit to Paris should be made a part of the application of the American Co. for modification of the latter's radiotelephone licenses. The

⁶⁰ Notice No. 13506, dated June 27, 1935, sent out by the Federal Communications Commission and contained in exhibit 2905.

⁶¹ Memorandum dated July 31, 1935, entitled "Discussion with Federal Communications Commission of proposed plan for direct radiotelephone service between France and the United States" and contained in exhibit 2095.

⁶² Aide Memoire, dated August 9, 1935, forwarded to Federal Communications Commission by the British Embassy and contained in exhibit 2095.

⁶³ Letter dated August 16, 1935, from Paul A. Walker, chairman, Telephone Division, Federal Communications Commission, to T. C. Miller, vice president of the American Telephone & Telegraph Co. and contained in exhibit 2095.

American Co. was further advised that if this could not be done all of the applications would be set for public hearing.

As a result of these negotiations, the agreement for direct service between the United States and France was signed in September 1935. Physically, this new direct service to France was effected by the diversion of one short-wave channel from the existing multiple circuit between New York and London, to a French terminal in Paris.

Direct service between the United States and other European countries.— On November 10, 1937, the Federal Communications Commission granted the American Co. commercial licenses for establishing radiotelephone service between the United States and Italy, Germany, and Switzerland.⁶⁴ On the same date, the American Co. was granted an experimental license for direct service between the United States and the Union of Soviet Socialist Republics. Evidence in support of the applications of the American Co. for these new points of communication shows that each of the foreign countries concerned desired that the American Co. join them in establishing such communication facilities. The application of the American Co. with respect to direct radiotelephone communication with the Union of Soviet Socialist Republics was granted upon a temporary experimental basis, subject to all conditions stated in the Federal Communications Commission's rules and regulations with respect to special experimental licenses.

The Aloisi Incident.

The unenviable position occupied by the United States as a result of virtual control of transoceanic radiotelephony to the European Continent by the British Post Office and the American Co. prior to the inauguration of direct service to France, is illustrated pointedly by the so-called Aloisi incident, which is often cited in support of the allegation that communication from the continent of Europe to the United States was only at the sufferance of the British Post Office. In this particular case it was allegedly stated by the Columbia Broadcasting System that its offices had received a communication on October 10, 1935, from its representative in London, stating that the British Post Office declined to transmit the discussion by Baron Aloisi of the application of sanctions against Italy by England and France as a result of Italy's activities in Ethiopia.

Theoretically, at least, the provision of direct circuits from the United States to other foreign countries should tend to eliminate interruptions which can result from the dominant position of a single foreign country.

Summary.

The charter of the American Telephone & Telegraph Co. contemplated a Nation-wide, and even a world-wide, telephone service. Beginning with the first Boston-New York line in about 1884, this objective has at the present time been substantially attained. This development involved a series of steps, each broadening the basis on which this service structure was erected. From 1884 until 1913 it was exclusively a Bell System development involving only the lines of the parent company and of the licensee companies. Since 1913 the independently owned telephone companies have been added

⁶⁴ See Federal Communications Commission Dockets Nos. 4541 and 4693 to 4713, inclusive.

to the integrated system and, in 1927, the final step in accomplishing the ultimate objectives set forth in the original charter was taken by the inauguration of trans-Atlantic radiotelephone service, which has since been expanded, through connections with other systems, to cover substantially the entire civilized world. In fulfilling the objectives set forth in the original charter of the American Co., many improvements in the art have been necessary before that result could be accomplished. The kind and character of these improvements have been discussed in the chapter on Patents.

The Bell System national wire network today furnishes not only toll telephone message service but many other public and private communications services. The toll message service, however, produces approximately 90 percent of the revenue from toll activities. In general, the long lines department of the American Co. provides the principal interstate toll facilities, whereas the associated companies and their connecting companies furnish the intrastate toll service and substantially all of the interstate toll service involving hauls of less than 40 miles. Six of the associated companies, New England Telephone & Telegraph Co., Southern Bell Telephone & Telegraph Co., Northwestern Bell Telephone Co., Southwestern Bell Telephone Co., Mountain States Telephone & Telegraph Co., and Pacific Telephone & Telegraph Co., furnish some interstate toll service within their respective operating areas involving hauls of over 40 miles.

The circumstance that the national communications services are subject to the jurisdiction of 48 States, the District of Columbia, and of the National Government, brings with it specific requirements with respect to the operation of these services and the division of revenues and expenses arising therefrom, as between the various participating carriers and as between the various classes of service, the rates for which are subject to regulation by various authorities. While jurisdiction over interstate services of this character was conferred upon the Interstate Commerce Commission in 1910, no extensive investigation of the reasonableness of interstate toll rates has been undertaken by any Federal regulatory body. As a result, such consideration as these problems of division have received has been given by various State commissions in connection with the problem of intrastate rates, both exchange and toll, predominantly exchange.

Until the decision in *Smith v. Illinois Bell Telephone Co.* (282 U. S. 133), there existed some doubt as to the point of origin and termination of interstate toll messages for the purpose of testing the reasonableness of the rates charged on the basis of the property and expenses related thereto.

In rate proceedings since the decision in *Smith v. Illinois Bell Telephone Co.*, *supra*, State regulatory bodies have, in general, stated, that rates prescribed by them are on the station-to-station basis which contemplates that the toll rate covers compensation for all toll service, including use of the exchange plant in completing toll calls, and the exchange rate is intended to cover exchange service only.

All toll rates of the Bell System, with the exception of certain short-haul rates of the New York Telephone Co., have been stated by the companies on what is known as the board-to-board basis. This method of stating toll rates results in including in the rate for exchange telephone service compensation to the telephone company for use of the exchange plant in originating and completing toll calls between the exchanges, irrespective of the extent to which each individual subscriber utilizes toll service. This view also of necessity carries with it the implication that State regulatory bodies, in fixing exchange rates, have, in effect, fixed the compensation for that portion of interstate toll services involved in the use of the exchange plant in completing interstate toll calls.

CHAPTER 13

RADIO BROADCASTING

The furnishing of program-transmission facilities¹ for the interconnection of broadcast stations, or for the connection of a broadcast station with a studio or other pick-up point, is the Bell System's principal function in connection with broadcasting at the present time. This chapter is concerned primarily with that subject, although other activities of the Bell System in connection with radio broadcasting are discussed. Radio broadcasting in the United States is a comparatively recent development, and this chapter is limited to the years 1920-37.

As will be shown hereinafter, the Bell System has a virtual monopoly in the furnishing of program-transmission service to broadcasting stations; its monopoly in this respect enables the Bell System to earn a substantial revenue (almost \$7,000,000 in 1936) from the furnishing of Nation-wide program-transmission services to broadcast stations. The real significance of this position lies in the fact that radio-broadcasting service throughout the United States, furnished by more than 700 broadcast stations in the country, depends principally upon the Bell System for the necessary local and long-distance program-transmission services from studio to station, and from station to station, which make possible local and network broadcasting.

The patent position of the Bell System in the field of radio broadcasting for the period covered by this chapter has been given in chapter 8. As discussed there, the patent position of the American Co. in the radio field was generally outlined in the cross-licensing agreement of 1920 and the agreements of 1926 between the American Co. and the so-called radio group.² Therefore the discussion in this chapter is presented under two chronological divisions: The period 1920 to July 1, 1926, and the period July 1, 1926, to 1937.

Policies and Practices During the Period 1920 to July 1, 1926.

The policies and practices of this period were formulated while the Bell System was asserting broad patent claims in the field of radio broadcasting, which claims were contested by the radio group. This matter was submitted to a referee in an arbitration proceeding. The referee's draft decision of November 13, 1924, however, indicated that the Bell System's patent rights were not so extensive as claimed. Between this latter date and July 1, 1926, negotiations were conducted by the radio group and the American Co. to settle the differences between them.

No policy with respect to furnishing program-transmission services to broadcasters had been formulated by the Bell System when broad-

¹ "Program-transmission facilities" as used in this chapter refers to the provision of channels as defined in Bell System's tariffs applicable to this type of service.

² See ch. 8, pp. 225-227.

casters first requested such services in 1921. The American Co.'s first recommendation to the associated companies, in December 1921, was that they "refrain from making any arrangements permitting either exchange or toll facilities to be directly connected to radio-telephone apparatus."³ Less than 4 months later the American Co. suggested to the associated companies that, although no definite policy had been determined, a more liberal course should be pursued. It recommended, accordingly, that circuits might be furnished to stations for noncommercial use, unless they were operated by public-service companies. The associated companies were also informed that the American Co. was planning to establish a radio-broadcast station in New York for commercial broadcasting, and that Western Electric Co. had been authorized to sell broadcast-transmitting equipment for noncommercial purposes. The American Co. suggested that the associated companies avoid, as far as possible, any commitment that the furnishing of circuits for broadcasting purposes was a part of the companies' public-service activities, by calling circuits so furnished "special circuits," and by making the contracts for their use for short periods and terminable on short notice. Requests for circuits for the radio group's stations were to be referred to New York for consideration.

Following this announcement, the American Co. established and operated radio station WEAf in New York City. Later this station was connected with other stations, including the second Bell System station, WCAP, Washington, D. C., by wire circuits of the Bell System.

The radio group also interconnected several radio-broadcast stations by the use of wire facilities obtained from the Western Union Telegraph Co. and the Postal Telegraph Co.

Radio conference, 1923.—On February 3, 1923, the American Co. mailed to the associated Bell companies a tentative draft of a bulletin (subsequently called Radio Bulletin No. 4), and called a conference of representatives of the associated Bell companies handling radio matters for the purpose of discussing its provisions. The conference was held in New York, commencing February 26, 1923. At this conference, A. H. Griswold, who was then assistant vice president of the American Co., actively engaged in conducting radio matters for the American Co., stated to such representatives what he had in mind ultimately for the Bell System in the broadcasting field:

* * * What I have in mind ultimately is that in each locality an important group of people will get together and form a broadcasting association. In that group of people should be the type that the community looks to as being the leaders of the community. In it I would expect to see the chamber of commerce, the important newspapers, the department stores, especially the people interested in radio and the general public as well. For that association we would erect, own, and operate a broadcasting station; they to provide all the programs; they to give to the public what the public desires but we to have the latest facilities known to the art and all of the things that go with them including remote-control lines and speech-input equipment. That station is to be operated by the Bell System under definite guaranties from the association as to expenses plus a reasonable return. In these expenses there will be a sufficient amount to amortize

³ It will be noted in this chapter that policies in radio broadcasting were formulated by the American Co., and that its desires were then transmitted to the associated Bell companies, which effectuated the policies. This practice is indicative of the degree of control exercised by the American Co. over the associated companies, which is a subject more fully discussed in ch. 4, Management and control of the Bell System.

that equipment over a short period. The obsolescence factor works to a very high degree in radio with its newness and with the art in its present state.

* * * We have been very careful, up to the present time, not to state to the public in any way, through the press or in any of our talks, the idea that the Bell System desires to monopolize broadcasting; but the fact remains that it is a telephone job, that we are telephone people, that we can do it better than anybody else, and it seems to me that the clear, logical conclusion that must be reached is that, sooner or later, in one form or another, we have got to do the job.

* * * I may state to you that I have talked this idea over with Messrs. Thayer, Gifford, and Bloom and each of them think it is a proper set-up. It puts us in where we belong; we are providing the facilities, the latest and best known to the art; we are in the telephone business still; we are a part of it. Whatever monopoly feature there is in it will be created by the local group itself which will get everyone interested in radio into that local group and if anyone desires to own his own private broadcasting station, they will say to him, "Come on in with the bunch, we represent this community in radio broadcasting."

This ultimate objective for the Bell System in radio broadcasting suggested by Mr. Griswold was never consummated, and the subsequent settlement between the Bell System and the radio group as of July 1, 1926, made the effectuation of such a plan by the Bell System impracticable, if not impossible.

There were discussed at the radio conference the restrictions to be placed on wire facilities to protect the American Co.'s interests, and the question of furnishing wire facilities to broadcast stations which infringed Bell System patents. The American Co. considered that all transmitting equipment except that manufactured by Western, that licensed by the American Co., and that erected and operated by the radio group, infringed its patents. The tentative draft of Radio Bulletin No. 4 proposed the denial of wire facilities to stations not licensed under the American Co.'s patents. Hence, consideration was given to a method of licensing stations in order that they might qualify for wire services.

The desirability of furnishing "wire telephony as an adjunct to radio broadcasting" instead of wire circuits was also considered at the radio conference. Wire telephony as an adjunct to radio broadcasting was distinguished from the leasing of wire circuits in that it carries with it, according to Radio Bulletin No. 4, the provision of circuits and speech-input equipment, equalization of lines, proper connection of wire-telephone facilities to broadcast stations, and the coordination of the entire service for best results.

Representatives of the American Co. stressed at the conference the desirability of the associated companies continuing to avoid any commitment that the furnishing of wire facilities was a part of their public-service undertaking.

Policies restricting use of wire facilities.—Following the 1923 radio conference, policies were formulated regarding the furnishing of wire facilities to broadcasters. These policies were adopted to protect the broadcasting activities and the patent position of the Bell System. Formal announcement of the policies was made in Radio Bulletin No. 4, mailed to the associated companies on May 9, 1923.

In this bulletin the recommendation was made that wire telephony as an adjunct to radio broadcasting, if available, be furnished to certain broadcast stations and denied to others, regardless of the availability of facilities. Such type of service might be furnished to.

Government stations, to stations licensed under the American Co.'s patents, and to Bell System stations. Stations licensed by the American Co. which operated in the same area as a Bell System station were, in general, to be denied wire facilities. The general policy was stated concisely in Radio Bulletin No. 4 as follows:

In general, wire telephony as an adjunct to radio broadcasting will be refused to broadcasting stations not licensed under the patents of the American Telephone & Telegraph Co. This is necessary because to establish as a definite policy the provision of wire telephony as an adjunct to radio broadcasting to stations in this class may prove embarrassing from a patent standpoint.

* * * * *

Our lines go with our broadcasting stations and wire telephony as an adjunct to radio broadcasting should not be provided except in an occasional important case where serious adverse reactions may result if it is refused.

Requests for circuits by the radio group and Bell-licensed stations operating in an area in which a Bell station was operating, and from nonlicensed radio stations, were to be referred to Mr. Griswold. Wire telephony as an adjunct to radio broadcasting was to be denied to broadcasters operating their stations for hire. Western's sales of speech-input equipment were restricted to the American Co. and the associated companies, since this equipment was to be furnished by the Bell companies to broadcasters as a part of wire telephony as an adjunct to radio broadcasting. Mr. Griswold expressed the opinion at the radio conference that the sale of speech-input equipment "would be a decided mistake and would further set back the ultimate idea that we have in mind in connection with radio broadcasting," because the ownership thereof would occasion a great demand for Bell wire circuits and a much greater desire to use, and the actual use of, lines of other wire companies.

In addition to the restriction on wire facilities imposed by Radio Bulletin No. 4, the American Co., in May 1924, requested the associated companies to refer to it any applications for facilities connecting two or more stations. Only one application of this kind came under the purview of the investigational staff. This was made to the New York Telephone Co. in October 1925. At that time, the associated companies were furnishing circuits used to connect the Bell station WEAf to other stations. When this application was first received, the American Co. requested the New York Co. to deny it. Later, in January 1926, a tentative decision was made that in the event the broadcaster insisted upon the fulfillment of the request, the circuits might be furnished.

The American Co., in May 1924, also requested the associated companies to refer to it applications for wire facilities involving the connection of Bell circuits with privately owned circuits or those furnished by other wire-using companies. During the remainder of the period now under consideration, it was the practice of the Bell Telephone companies to prohibit the interconnection of Bell and non-Bell wire facilities used in connection with broadcasting.

Licensing policy.—As stated above, there was discussed at the 1923 radio conference a program for licensing broadcast stations under the American Co.'s patents, in order that they might obtain wire facilities from the Bell System. Such a licensing program was formulated by the American Co. in November 1923. The procurement of a license, however, did not assure a broadcaster of wire facilities, as facilities might not be available or the restrictions placed

on furnishing wire telephony as an adjunct to radio broadcasting might prevent the furnishing of facilities.

In addition to qualifying for wire facilities, two other considerations were given broadcasters obtaining licenses under Bell System patents: (1) Immunity from infringement suits under patents owned and controlled by the American Co., and (2) the privilege of purchasing replacement parts, such as vacuum tubes, from Western.

An early memorandum in the files of the American Co. indicated a fourfold purpose in the licensing program: ⁴

The protection of our patents which are essential to our regular business.

Consideration for the profits of the Western Electric Co.

Effect of nonlicensed stations competing with telephone company stations for programs.

Reaction on Western Electric Co.'s sold stations of other stations getting similar privileges for less money by procuring a license.

The American Co. informed the associated companies of its licensing policy in November 1923. At first, there was no active solicitation of licenses—only three stations were licensed up to January 21, 1924. Thereafter, on April 18, 1924, the American Co. recommended to the associated companies that they contact all broadcasters and offer them a license. A routine was established by which the radio representatives of the associated companies and the supply managers of Western cooperated and coordinated their efforts in licensing radio stations and selling Western Electric equipment.

From time to time, the American Co. informed the associated companies that it did not intend to license stations established after a specified date. Originally, the American Co. did not contemplate licensing stations established after November 16, 1923, but on April 18, 1924, that date was withdrawn. Subsequently, June 1, 1924, was established as a dead line in order to facilitate a settlement out of court of a patent infringement suit against station WHN, in accordance with which a license was granted to this station for a consideration. This dead-line date was withdrawn on August 22, 1924. In July 1925 the associated companies were directed to make no more offers of licenses to infringers and to refer applications for licenses to the American Co. Certain exceptions were made to the policy in 1925, at which time the American Co. was not issuing licenses. Some of the reasons assigned for the exceptions were: Broadcasters' bringing "unbearable pressure" upon an associated Bell Telephone company; avoidance of conflicts with a broadcaster who was releasing press articles that the American Co. was attempting to monopolize broadcasting; threat by a broadcaster to appeal to the Illinois Commerce Commission if circuits were not furnished; operation of a broadcast station by Boy Scouts of America; resistance by a broadcaster to an associated Bell Telephone company's refusal to furnish wire facilities; and the signing of an order by a broadcaster for Western equipment.⁵ At the beginning of 1926, there were some 20 applications for licenses pending. The American Co. at that time decided it was pursuing an unsound policy by refusing to grant licenses when it was not prepared to bring suits for infringement. Accordingly, it offered licenses to all applicants having applications on file, and it appears

⁴ Conference memorandum dated October 5, 1923, exhibit 289, p. 83.

⁵ These exceptions to the American Co.'s policy of refusing program transmission services to unlicensed stations are discussed in exhibit 289, pt. IV, sec. 3.

that a free-licensing policy, without solicitation, continued throughout the remainder of the period under consideration.

The permanent fee for licenses established by the American Co. in 1924 was based on \$4 per watt power of stations, with a minimum fee of \$500 and a maximum fee of \$3,000. Educational stations and those established for experimental purposes were licensed for a nominal fee of \$1.

An American Co. official expressed the opinion that the need for program transmission services would bring station owners to the telephone company to discuss licenses; and that the need for such services was the principal reason for broadcasters seeking a license.* Wire services were denied not only to unlicensed stations, but to licensees which became delinquent in the payment of their license fees.

Modification of licensing policy and restriction on the use of wire facilities.—During 1924, certain of the restrictions on the use of wire facilities in connection with broadcasting were removed, and modifications were made in regard to the Bell System's licensing policy. On April 18, 1924, restrictions prohibiting stations licensed under the American Co.'s patents to operate for hire were withdrawn. Radio stations which had been licensed for noncommercial purposes could obtain commercial licenses without the payment of additional fees. As of May 2, 1924, restrictions were withdrawn on furnishing facilities to Bell-licensed stations operating in an area where there was a Bell System station.

On May 23, 1924, the associated companies were informed that Western had been released to sell speech-input equipment to be used in connection with equipment licensed under the American Co.'s patents. The associated companies were authorized to connect their local circuits to privately owned speech-input equipment. Thus, wire circuits as distinguished from wire telephony as an adjunct to radio broadcasting might be furnished for local "pick-ups," as had been the practice formerly from April 1922 to May 1923. In considering the sale of speech-input equipment, according to memoranda of the American Co., the opinion was expressed that a favorable decision would "be a forced one in the light of the present undesirable publicity in which the American Telephone & Telegraph Co. is accused of attempting to monopolize broadcasting."

The other restrictions on wire facilities were continued until after July 1, 1926, when the broadcasting activities of the radio group and the Bell System were reallocated in settling the disputes arising under the 1920 cross-license agreement. This reallocation, although discussed in chapter 8, will be here briefly reviewed in considering the policies and practices of the Bell System during the period of July 1, 1926, to date.

Policies and Practices During the Period July 1, 1926 to 1937.

In addition to the 1926 license agreement, two other contracts, the purchase agreement and the service agreement, were executed on the same date. Certain details of these latter contracts are essential to show the recent activities of the Bell System in radio broadcasting.

Under the provisions of the 1926 license agreement the American Co. and the radio group each granted and each received nonexclusive patent rights under their respective patents to manufacture, sell,

* See exhibit 289, p. 166.

lease, and use broadcasting stations. The American Co.'s right to engage in broadcasting was, however, limited by the terms of the purchase agreement of the same date, which is discussed hereinafter. The American Co. received exclusive patent licenses under the patents of the radio group in the field of wire telephony, with certain exceptions. Such exclusive patent licenses included the exclusive rights under the patents of both groups for furnishing wire services to broadcasters, subject to nonexclusive licenses under the patents of both groups retained by and granted to the radio group to make and use apparatus and systems for such purpose on the radio group's own systems. The nonexclusive licenses thus acquired would be usable by the radio group only in the event that it built its own network. In addition, the radio group retained nonexclusive licenses under its own patents for providing itself or obtaining from others wire services, in the event the telephone group failed to furnish such facilities to the radio group.

The purchase and service agreements.—On May 11, 1926, the American Co. caused the organization of the Broadcasting Co. of America, which, on May 14, 1926, took over the former's broadcasting business. By the purchase agreement, the Broadcasting Co. of America, with the consent of the American Co., a party thereto, agreed to sell to the Radio Corporation of America radio station WEAF, together with all its business, physical property, contracts, and goodwill. In exchange for station WEAF and other assets of Broadcasting Co. of America, R. C. A. agreed to pay \$1,000,000, of which \$800,000 was considered goodwill. The contract provided that the sale, assignment, and payment of the consideration should be effected on or before December 31, 1926.

The purchase agreement and other documentary evidence introduced at the hearing before the Telephone Division of the Federal Communications Commission, as well as subsequent events, make clear the intent of the telephone group to withdraw from the owning and operating of broadcast stations, for specific provision was made in the purchase agreement that, in the event the telephone group engaged in such activity or certain other activities prior to July 1, 1933, the American Co. should repay Radio Corporation of America the \$800,000 designated as goodwill. In addition, provision was made that, in the event the Bell System engaged in such activities prior to July 1, 1936, the Radio Corporation of America should have certain nonexclusive rights to use the patents of both groups in the field of wire telephony, including wire facilities used in connection with its broadcasting activities.

By an agreement dated October 29, 1926, Radio Corporation of America assigned to National Broadcasting Co. the former's right to acquire radio station WEAF, together with its business, goodwill, etc., upon the payment of the purchase price recited in the purchase agreement. Station WEAF was transferred to the National Broadcasting Co. instead of the Radio Corporation on November 1, 1926.

The detailed provisions of the Bell System's obligation under the 1926 cross-license agreement to furnish the radio group wire facilities, as well as the charges therefor and the regulation in respect thereto, are set forth in the service agreement between the American Telephone & Telegraph Co. and the Radio Corporation of America.

The service agreement provides that the relations between the parties as specified therein shall continue until December 31, 1945, but automatically continue thereafter until canceled by 5 years' written notice by either party given after January 1, 1941; that the American Co. is obligated to furnish, within 1 year after request therefor, networks, regular extensions, loops, and coordinating telephone and telegraph service, with the proviso that in the event the Radio Corporation is unable to give reasonable notice for these types of facilities, the American Co. will attempt to furnish them by emergency installation; but if it fails so to do, the Radio Corporation shall have nonexclusive patent rights under the patents of both groups to provide itself or obtain from others the necessary facilities, including the right to interconnect them with Bell wire facilities. The Radio Corporation's nonexclusive patent rights under this last mentioned provision, as well as the privilege of interconnection, are terminated upon the availability of telephone company facilities. The American Co. agreed to furnish special extensions to networks and loops used in connection therewith, subject to its public and special contract service requirements.

Although the statement is made in the service agreement that it is not the intention of the parties to prevent the Radio Corporation from engaging facilities of others, the American Co. considered in 1926, and as late as October 1936, that the patents of both groups were essential to give adequate service to broadcasters.

The contract further recited that the Radio Corporation, General Electric Co., and Westinghouse Electric & Manufacturing Co. were then obtaining, and had commitments to continue the use of, wire facilities of others on which patents of the Bell System were employed, and that it was the intention of the parties that telephone company facilities should be substituted for such non-Bell facilities, as the commitments of the radio group companies therefor expired, in consideration whereof the American Co. expressly waived patent infringement by such other companies by reason of their use of Bell patents on non-Bell facilities. Although General Electric and Westinghouse were not signers of the service agreement, later acts of the Bell System show clearly its understanding that they were to be bound by the provisions just recited.

Thus, by the three agreements of July 1, 1926, the Bell System was assured the field of furnishing wire circuits to broadcasters including the business of the radio group, the then principal user of the service. As between the two groups, it was contemplated that the radio group only would engage in the operation of broadcast stations, while the manufacture and sale of transmitting equipment might be engaged in by both groups.

By an agreement dated January 1, 1930, Radio Corporation of America extended to National Broadcasting Co., Inc., nonexclusively and only in connection with broadcasting, the right to have the telephone company furnish wire facilities and to obtain the patent licenses specified in the service agreement.

The arrangement occasioned by these three contracts of July 1, 1926, has continued to date. As pointed out in chapter 8, there were subsequent cross-license agreements executed in 1932 and 1935. In general, the 1932 cross-license agreement changed the exclusive licenses received in the 1926 agreement by the Bell System in the field of wire

telephony and other fields to nonexclusive licenses, including the right to grant nonexclusive licenses.

Since July 1, 1933, the Bell System has been in a position to operate broadcast stations without forfeiting to the Radio Corporation of America the \$800,000 considered as goodwill in the sale of radio station WEAf. As of July 1, 1936, the American Co. was relieved of its obligation of granting Radio Corporation of America patent licenses to furnish itself or obtain from others wire facilities for use in connections with R. C. A.'s own stations, in the event the Bell System operated broadcast stations.

In September 1934, Bell System companies filed tariffs with the Federal Communications Commission covering program transmission service. These tariffs supersede the 1926 service agreement with regard to the furnishing of channels for program transmission service.

Modification of Restrictions on Wire Facilities.

The 1926 contracts between the Bell System and the radio group brought about certain modifications in the restrictions the American Co. had placed on the furnishing of wire facilities to broadcasters.

By the service agreement of July 1, 1926, which became operative on or about November 1, 1926, at the time National Broadcasting Co., Inc., took over station WEAf, the American Co. agreed to furnish properly equalized circuits which might be connected with speech input and certain coordinating equipment owned and operated by the National Broadcasting Co. On or about November 27, 1926, therefore, it was decided that the long-lines department of the American Co. might furnish wire circuits to broadcasters as distinguished from wire telephony as an adjunct to radio broadcasting.

The American Co. specifically agreed in the service agreement to furnish wire networks connecting broadcast stations. As pointed out above, the New York Telephone Co. had been informed by the American Co., in the latter part of 1925, that a request for facilities to connect two broadcast stations should be denied; but later, in January 1926, it was tentatively decided that in the event the broadcaster insisted upon the furnishing of circuits for that purpose, they might be furnished. After the execution of the service agreement, specifically providing for such use of wire facilities, the decision was made that the New York Telephone Co. might properly furnish wire facilities connecting two broadcast stations.

The policy of denying wire facilities to broadcasters who had not obtained a license under the American Co.'s patents, initiated in May 1923, was continued until August 1928.

After the settlement of July 1, 1926, the advisability of continuing the policy was discussed by officials of the American Co. In memoranda recording these discussions, company officials and lawyers expressed the opinion that the adoption of the policy in lieu of infringement suits was "legally unsound," that the company's only reasonable remedy was to sue infringing stations, and that the company's licensing policy had established its patent position. The company recognized that broadcasters sought licenses principally to obtain wire facilities and considered the continuance of the practice unsound from a business standpoint and one which might result in unfavorable public relations. It was decided, therefore, in August 1928, that the associated companies might furnish wire facilities to broadcasters regardless of their license status.

Liberalization of licensing policy.—The American Co.'s authorization to furnish wires to broadcast stations regardless of their license status removed the greatest incentive for broadcasters to apply for patent licenses. The position of the American Co. in the field of manufacture and sale of transmitting equipment was also quite different after the reallocation of the broadcast field in 1926 than when the licensing program was formulated in 1923. It had no broadcasting business to protect, as had been the case in 1923, and the radio group had acquired coextensive patent licenses for the manufacture and sale of broadcasting equipment.

Sales and licensing policies adopted by the radio group had a direct bearing on the American Co.'s licensing program. Officials of the American Co., as early as October 1926, considered it important to reach a satisfactory understanding with R. C. A. for licensing broadcast stations. There was no indication in the files of the American Co. that an understanding was reached between the two groups, but American Co. memoranda state that Radio Corporation of America, in general, limited its sales of replacement parts to stations sold by Western and R. C. A. and those licensed by the American Co., until April 1928.

In July 1928, R. C. A. informed the American Co. that it proposed to license broadcast stations purchasing equipment from it for a nominal fee. While the American Co. was considering what course to pursue, R. C. A. held its program in abeyance until some time after November 12, 1928. Between this last mentioned date and April 30, 1929, however, R. C. A. became rather active in issuing licenses for a nominal consideration of \$1. Western desired to accord broadcasters the same treatment, in order to protect its sales of broadcasting equipment, although at that time Western was authorized to sell to 487 of the then 660 active broadcast stations.

On May 7, 1929, Western Electric Co. was authorized to issue patent licenses under Bell System patents for a nominal consideration of \$1. The American Co. also authorized Western to sell parts to broadcast stations so licensed. Six years later, in July 1935, Western was permitted to sell to broadcast stations regardless of their license status.

The American Co.'s revenue from the licensing of broadcast stations aggregated \$402,542 during the years 1923 to 1929, inclusive.

Policies re interconnections.—The policy of prohibiting interconnections, either directly or indirectly, of Bell wire circuits used for program transmission with privately owned circuits or circuits of other wire-using companies, originated in May 1924, was continued without modification until the latter part of 1936. At that time, the policy was modified to permit the broadcaster to interconnect Bell local or exchange circuits, as distinguished from Bell long-distance or interexchange facilities, with wire circuits of others.

Prohibiting interconnections has been an effective means of preventing competition in the furnishing of wire facilities for broadcast purposes. A similar policy was pursued by the Bell System with regard to independent telephone companies in acquiring its monopoly position in rendering commercial telephone service. (See ch. 5.) Telegraph companies, which have been the only competitors in this field, have in many instances been able to furnish satisfactory interexchange circuits, but have been unable to provide the necessary local facilities.

Hence, the policy has eliminated the use of telegraph circuits in those instances where it was necessary to obtain local Bell circuits. This situation was summarized in a memorandum by F. H. Van Winkle of the New York Telephone Co., in 1927, when he said:

We pick up at a certain designated point features for broadcasting and transmit to another point. At the originating point we receive the features from the instrumentalities of others and deliver to the instrumentalities of others at the terminating point. We have, in general, no control over the instrumentalities to which we connect. Further, in this radio work, there is not the same principle which is involved in our regular service preventing connection to foreign facilities.

In other words, from an engineering standpoint we might require certain standards before we agreed to connect. Assuming that those standards are met, we would have no engineering grounds for refusal. Therefore, our refusal must be based on policy grounds, that is, that we have distributing plant and telegraph companies have not; we have toll facilities and telegraph companies at times have toll facilities available; that we desire all the business we can get and, therefore, would not connect with the telegraph companies, permitting them to piece out their restricted plant with our complete plant. * * *

Also in 1927, when high officials of the American Co. had under consideration a modification of the policy similar to the one made in 1936, the opinion was expressed that such a change would result in "the building up of competition in the furnishing of broadcasting facilities with the resulting impairment in scope of our own business along these lines."⁷

Bell System companies have generally assigned responsibility for quality of service and protection of Bell System financial interests and plant as reasons for the effectuation and continuance of the policy.

Prior to the change in policy in 1936, Bell System companies generally declined to furnish circuits to broadcasting companies which contemplated making interconnections with circuits of others. Exceptions have been made for broadcasts of great public interest and in cases where adverse public relations would result by a denial of circuits.

Contracts between broadcasters and Bell System companies contain provisions that the interconnections of the circuits furnished under the contracts with circuits of others authorize the Bell companies to discontinue the use of Bell System circuits. Prior to the filing of tariffs covering program transmission service, Bell System companies relied on the enforcement of this contractual provision to prevent interconnections of their facilities that had been installed. Since the filing of tariffs incorporating the prohibitions against interconnections, Bell System companies have informed broadcasting companies which contemplated or made interconnections that such a practice violated their filed tariffs and therefore could not be countenanced.

Exceptions to the policy of prohibiting interconnections between Bell and non-Bell facilities were disclosed from an examination of Bell System files.⁸ These exceptions involved interconnections of local and long-distance Bell facilities with local and long-distance facilities of other wire-using companies and with privately owned facilities, both prior and subsequent to the filing of tariffs prohibiting such interconnections. Service over the interconnected facilities, in some instances, was in violation of a specific prohibition in the tariff on file with the Federal Communications Commission.

Other practices.—The investigation undertook the examination of other practices to which broadcasters had expressed objection. These

⁷ Exhibit 289, p. 162.

⁸ Exhibit 289, pt. V.

practices were made the subject of a questionnaire which was sent to all licensed broadcast stations. Shortly after the information requested by the questionnaires was received by the Commission, but prior to its presentation in the record, the Bell System companies modified certain of these practices and made other revisions. Specifically, the revisions relate to measuring interexchange circuits mileage on an air-line basis instead of a circuit-mileage basis, connection charges, minimum periods for highest-grade continuous service, and interconnection of different types of services. It is estimated that these revisions will result in annual savings to broadcasters of \$530,000.⁹

Present position of Bell System in furnishing wire facilities.—The attainment of the present dominant position of the Bell System in the field of program transmission is a natural result of its ownership of the most extensive Nation-wide communication network and its knowledge of the effective methods of sound transmission, gained through its experience in the operation of a telephone system and its research activities.

The Bell System's position in this field is apparent, when a comparison is made between its revenues from this source and the number of miles of circuits it furnishes broadcasters, and the revenue obtained and the number of miles of circuits furnished by the telegraph companies which also furnish program-transmission service.

Bell System gross revenue from furnishing wire facilities to broadcasters totaled approximately \$5,500,000 during 1935. The Western Union Telegraph Co. and the Postal Telegraph-Cable Co., which also lease circuits to broadcasters, derived revenues from this source during 1935 in the amounts of \$10,754 and \$18,865, respectively.

On March 31, 1936, the Bell System was furnishing to National Broadcasting Co., Inc., and Columbia Broadcasting System, 24,949 and 17,217 circuit-miles of radio channels, respectively. In addition, it was furnishing to the other stations not associated with these two chains many hundred miles of circuit. In contrast, Postal Telegraph-Cable Co. was furnishing 3,369 circuit-miles of radio channels to broadcasters on August 6, 1936, whereas Western Union was furnishing only a little more than 300 miles of wire circuits for this purpose on July 29, 1936. These figures, although not strictly comparable as to date, are indicative of the relative positions of the Bell System and the telegraph companies in the field of radio transmission.

Bell System tariffs provide for various grades of program-transmission service. The charge for the lowest of these grades exceeds the charge made by the telegraph companies for leased telephone circuits which are, to a limited extent, usable for program-transmission service. Except in those instances where Bell System facilities are not available, the only apparent purpose in desiring the facilities of other carriers is the offer by the other carriers of a much lower rate for a usable, although possibly not a comparable, facility.

Summary.

By reason of the 1920 cross-license agreement between the American Co. and General Electric Co. (extended in part to Radio Corporation of America, Westinghouse Electric & Manufacturing Co., and others composing the radio group), the Bell System asserted rights to manufacture, use, lease, and sell broadcast transmitting equip-

⁹ Federal Communications Commission's Annual Report for the Year 1937, p. 90.

ment, and furnish wire facilities used in connection with radio broadcasting, subject only to the radio group's right to erect and operate broadcast stations. The extensive rights asserted by the Bell System were contested by the radio group. The arbitration proceedings resulting therefrom indicated that the American Co. rights were not as extensive as asserted (November 1924), and the tentative determination was unsatisfactory to both groups. A new cross-license and other agreements, therefore, were executed between the parties, wherein the American Co. received, among other grants exclusive patent licenses under the patents of both parties to furnish wire facilities to broadcasters, subject to certain exceptions, and non-exclusive licenses to manufacture, use, lease, and sell broadcast transmitting equipment. The radio group, among other grants, received nonexclusive patent licenses to manufacture, lease, use, and sell broadcast transmitting equipment (July 1926). By complementary agreements, the American Co. sold its broadcasting business to Radio Corporation of America, and agreed to refrain from such activity or be subject to large monetary and other penalties and to furnish R. C. A. what wire services it needed in connection with its broadcasting activities. This allocation of broadcasting activities between the two groups has continued to date.

During the period 1920-26 the Bell System erected and operated broadcast stations, established a broadcast chain, manufactured and sold broadcast-transmitting equipment, and furnished wire facilities to other broadcasters. In conducting the latter activity, it formulated and effectuated policies restricting the use of wire facilities to protect and encourage its own broadcasting activities and to protect its patent position.

Since July 1926, when the Bell System sold its broadcasting business to the radio group, it has limited its broadcast activities to the furnishing of wire facilities to broadcasters. By reason of its patent position, its extensive wire networks, and the policies adopted, the Bell System has attained a virtual monopoly in the furnishing of Nation-wide program transmission services. It has also continued the manufacture and sale of broadcast-transmitting equipment through Western.

Prior to the enactment of the Communications Act of 1934, the Bell System successfully avoided any commitment that the furnishing of wire services to broadcasters was a part of its public service undertaking.

CHAPTER 14

NONCOMMUNICATIONS ACTIVITIES¹

The Bell System, in addition to its primary function of furnishing telephone service, is engaged in various noncommunications fields. The activities of the Bell System in these noncommunications enterprises are derived principally from technical and scientific research directed toward the communications art, which has resulted in the development of patents and technique applicable to a wide range of uses in the commercial, industrial, entertainment, scientific, and educational fields. Similarly, in the cross-licensing agreements with the radio group and other license-exchange agreements, the Bell System was the recipient of patent rights in fields not strictly relating to communications.² The research activities of the Bell System, as well as the costs thereof allocable to the various phases of research, have been discussed in chapter 7.

In general, the Commission's study of noncommunications, by-products activities of the Bell System, was limited to an investigation of Electrical Research Products, Inc. (E. R. P. I.). This summary of the policies and practices of this company will be limited to the sound-motion-picture field, because therein are contained basic noncommunications policies of the Bell System and those of great financial import. The sound and motion-picture activities of the Bell System are in a competitive field, as the radio group was the recipient of patent licenses by virtue of the cross-license agreements to exploit this field.³ Some of the other noncommunications fields in which the Bell System is operating, has operated, or has granted licenses to others, are as follows:

1. Public address, phonograph, and radio distribution systems.
2. Radio receiving sets.
3. Acoustic engineering apparatus.
4. Watch rate testing and adjusting.
5. Race-timing apparatus.
6. Aids to hearing.
7. Electrosurgical knives and other medical equipment.
8. Photoelectric cell applications.
9. Electric sound recording and reproduction.

Exploitation of Byproducts by the Western Electric Co.

Prior to 1925, the exploitation of Bell System byproducts in domestic commercial fields was carried on by Western.⁴ Western's electrical supply business had assumed such proportions by 1925 that

¹ For detailed development of this subject, see exhibits 1946-A-B-C.

² See ch. 8, pp. 225-232.

³ *Ibid.*

⁴ See ch. 1, sec. 3.

Graybar Electric Co. was organized to take over certain of its distributing activities, particularly apparatus manufactured by Western and distributed through Western's supply department to the supply trade. Numerous activities, particularly licensing arrangements, were excluded in the contract with Graybar among which was the exploitation of apparatus for recording and reproduction of sound in coordination with motion pictures.

Western originally undertook the exploitation of sound motion pictures through promoters.⁵ Its negotiations with them culminated in the organization of the Vitaphone Corporation (Vitaphone). This corporation was organized by other interests⁶ for the express purpose of entering into an agreement with Western for licenses to engage in such field. An agreement was executed between Western and Vitaphone on April 20, 1926. Broadly stated, the agreement provided that Vitaphone was to receive an exclusive license for the exploitation of Western sound-motion-picture equipment, and was to act as the licensing agency of Western; that is, Vitaphone was to have the responsibility of negotiating license agreements for the use of Western equipment with producers and exhibitors of motion pictures.

Organization of Electric Research Products, Inc.

Electrical Research Products, Inc., was incorporated on December 20, 1926, as a wholly owned subsidiary of Western Electric Co. for the exploitation of commercial fields outside of the telephone business.

The scope of E. R. P. I. operations is set forth in a contract between Western and E. R. P. I. dated December 30, 1926, by which E. R. P. I. was to purchase, subject to limitations, that portion of Western's business, together with patent licenses, contracts, and goodwill relating thereto, distinct from its Bell System business, its Graybar business, its business with International Telephone and Telegraph Corporation or International Standard Electric Co., and its business in Canada and Newfoundland. The purchase included patent licenses in connection with sound motion pictures and the license agreement with Vitaphone.⁷ E. R. P. I.'s principal activity "has been the granting of licenses and the furnishing of equipment and technical service in connection with talking pictures."⁸

E. R. P. I. Relations With Major Motion Picture Producers.

Vitaphone, acting under the exclusive license from Western dated April 20, 1926, issued one sublicense agreement, dated December 31, 1926, to the Fox-Case Corporation. Five of the larger motion-picture producers,⁹ however, decided in February 1927 to postpone for 1 year action on the introduction of the new art unless negotiations therefor were collectively conducted, because of the legal, technical, and financial questions involved, and appointed a committee to study the desirability of the different equipments available.

Even prior to E. R. P. I.'s incorporation, the relationship with Vitaphone became unsatisfactory to Western. Shortly after its

⁵ See exhibit 1946-B, p. 160.

⁶ Walter J. Rich, a promoter, and Warner Bros. Picture Co.

⁷ See exhibit 1946-A, ch. 5.

⁸ Memorandum by President Gifford, dated March 17, 1936, exhibit 1-1 (p. 5, exhibit 1946-A). This memorandum is contained in the record of Federal Communications Commission Special Investigation Docket 1, as exhibit 1417.

⁹ Paramount-Famous Lasky Corporation, Firnatone Corporation (First National Pictures Corporation) United Artists Corporation, Universal Pictures Corporation, and Metro-Goldwyn Pictures Corporation.

formation, E. R. P. I. began negotiations with Vitaphone with regard to terminating the latter's exclusive license agreement which was consummated by three agreements of May 18, 1927. The Bell System thereby regained the exclusive right to market and service Western sound equipment. Vitaphone became a licensee of E. R. P. I., as did the Fox-Case Corporation.

After the expiration of the agreement of February 17, 1927, between five of the larger producers to postpone adoption of sound pictures for 1 year, E. R. P. I. granted licenses to these companies.¹⁰ By means of contractual letters executed simultaneously with the recording licensees, the producers agreed to install Western reproducing equipment in all theaters under their control or in which they had an interest. Similar license agreements were executed with other motion-picture producers.¹¹

As a result of these negotiations with the major motion-picture producers, the Bell System secured exclusive contracts with 90 per cent of the film-producing industry. It also gave the Bell System a dominant position in the furnishing of sound-reproduction equipment. On December 29, 1928, there were 95 theaters using sound-reproduction equipment not manufactured by Western as against 1,046 theaters using Western's equipment.

E. R. P. I.'s Trade Policies and Practices.

The license agreements with the major motion-picture producers were executed after the producers had investigated the possibilities of securing satisfactory equipment and service from all available sources, and had determined that E. R. P. I. offered the best possibility for the successful exploitation of sound motion pictures by the producers at that time. There were no competitors in the field at that time in the sense that they had equipment, organization, and facilities available to supply a large market or service the equipment after it had been installed. The execution of these agreements assured E. R. P. I. of a substantial advantage over any potential competitor in the business of supplying recording and reproducing equipment to the motion-picture industry. They assured E. R. P. I. as of the date of their execution, of a major share in the revenues to be derived from supplying sound-recording equipment and the major portion of any royalties resulting from the use of such equipment. In connection with the producer license agreements, E. R. P. I. also was able to introduce into exhibitor contracts provisions which were complementary to those contained in the producer license agreements.

Recording and reproducing equipment manufactured by Western was furnished by E. R. P. I. on a lease basis, and many restrictions were placed on the use of the equipment. E. R. P. I. guaranteed its licensees against loss from infringement suits. Licensing contracts have been subject to revision and change throughout E. R. P. I.'s exploitation of the motion-picture field. More particularly will those clauses of the license contracts be discussed which have been the focal points of control, conflict, and litigation. In discussing these salient provisions of the licensing agreements, no attempt will be made to evaluate questions of legality or illegality.

¹⁰ Producer license agreements were negotiated with four of these producers on May 11, 1928. Universal, the fifth producer, executed a license contract on July 18, 1928.

¹¹ Hal Roach Studios, on May 18, 1928; Christie Film Co., on June 20, 1928; Columbia Pictures Corporation, on September 25, 1928; Fox Film Corporation, on November 14, 1930 (effective May 11, 1928); and Fox Hearst Corporation, on November 14, 1930 (effective May 11, 1928).

Among the significant types of provisions are: (1) Those limiting the combination of Western recorded films with non-Western reproducing equipment or non-Western recorded films with Western reproducing equipment, which provision gave rise to the issue of non-interchangeability; (2) those provisions relating to the collection of royalties, which later gave rise to controversies with E. R. P. I. competitors and motion picture producers' licensees regarding double royalties; (3) those provisions in motion picture exhibitors' licenses requiring that servicing of equipments and supply of repair and replacement parts be furnished exclusively by E. R. P. I. These provisions were the source of extended controversy and litigation between E. R. P. I. and exhibitors, and E. R. P. I. and competitors. The Bell System has contended that the inclusion of those provisions in the license contracts have been necessary to assure efficient operation of the equipment.

Noninterchangeability.—Under the provisions of the earlier recording and reproducing licenses, the licensees were expressly prohibited, on the one hand, from making Western sound records available to theaters that had installed reproducing systems not of Western manufacture, and, on the other hand, from exhibiting on Western reproducing apparatus pictures not recorded by Western equipment.

The contracts negotiated with the major producers in May 1928 contained the following restrictive clause:¹²

* * * Licensee agrees that it will use the recording equipment to be leased to it by Products as herein provided, pursuant to the methods and systems and in the manner prescribed by Products from time to time, and that it will distribute sound records made hereunder only for use with, on, or in connection with reproducing equipment which operates properly, reliably, and efficiently to reproduce sound from sound records made hereunder, with adequate volume and of quality equal to that obtained by the use of equipment supplied by Products.¹³

Exhibitor contracts contained a parallel clause, reading as follows:¹⁴

2. * * * the exhibitor shall not * * * operate, use, or employ the equipment in any manner in conjunction with any sound record not made under license from Products for such use, unless such sound record is of such character that the equipment will operate properly, reliably, and efficiently to reproduce sound from such sound record with accuracy of quality and adequacy of volume.

Although in structure the clauses concerning interchangeability in the recording and reproduction contracts differed materially from that in the early Vitaphone contracts, their administration indicated no change of intent. E. R. P. I. did not clearly define what was meant by the phrase "which operates properly, reliably, and efficiently to reproduce sound from sound records with adequate volume and of quality equal to that obtained by the use of equipment supplied by Products." No provision was made for the test to be applied in determining "equal quality and adequate volume" or the party responsible for applying it. The omission of such recitals resulted in uncertainty for producers and exhibitors, since an interpretation of the agreement unacceptable to E. R. P. I. might result in a breach of contract and loss of license. There is no evidence to indicate that any effort was ever made on the part of E. R. P. I. to enforce the non-

¹² See exhibit 304A, Recording License Agreement between Electrical Research Products, Inc., and Metro-Goldwyn Pictures Corporation, dated May 11, 1928. Contracts with other major producers contained similar provisions.

¹³ "Products" refers to E. R. P. I.

¹⁴ See exhibit 1630, Form 263-TS. Exhibitor license agreements containing this provision were executed in the months immediately following January 1928. Later, in the same year, Form 288-TS (exhibit 1638), was used, which altered the clause so that it was no longer required that records should be tested by E. R. P. I. prior to use, but placed upon the exhibitor, in the first instance, the burden of testing the records for accuracy of quality and adequacy of volume.

interchangeability clauses of the exhibitors' contracts. The presence of these clauses in the early contracts with exhibitors may have operated to limit the distribution and exhibition of films produced on non-E. R. P. I. equipment. However, the statistics available indicate that the effect was negligible, since the distribution of pictures produced with E. R. P. I. equipment to theaters using non-E. R. P. I. equipment was substantial almost from the beginning, as shown in the decision of the district court in the case of *General Talking Pictures Corporation v. American Telephone and Telegraph Co.* (18 Fed. Sup. pp. 650, 661).

At first E. R. P. I. licensees were not greatly concerned by the question of interchangeability, since there was a limited amount of competing equipment in operation and a small number of films made on competitive equipment in circulation. As the industry grew, more non-Western recorded films and competitive equipment appeared. As E. R. P. I. producer-licensees were interested in obtaining the widest possible distribution of their films, and E. R. P. I. exhibitor-licensees were desirous of acquiring films in the largest possible market, the question of interchangeability became important. E. R. P. I., however, refrained from making a positive declaration as to its position with reference to combining Western-recorded pictures with competitive reproducing equipment.

The Radio Corporation of America, the major competitor of the Bell System in the sound-motion-picture-equipment field, led in the attempt to obtain a definite statement from E. R. P. I. concerning this question. E. R. P. I., however, remained noncommittal. R. C. A. felt that there should be no question about interchangeability between its equipment and that of E. R. P. I. Both R. C. A. and the American Telephone & Telegraph Co. were parties to the 1926 cross-licensing agreement which licensed each party under all the patents of both groups to manufacture, use, lease, and sell the apparatus involved.¹⁵ R. C. A. even went so far as to threaten suit against the Bell System. Paul D. Cravath, of the law firm of Cravath, De Gersdorff, Swaine & Wood, attorneys for the R. C. A., wrote to Walter S. Gifford concerning E. R. P. I.'s administration of the noninterchangeability provision as follows:¹⁶

We regard such practices as unlawful, but before instituting legal proceedings feel that it is only neighborly that we should ascertain at headquarters whether our information is correct.

Subsequent to this letter a conference was held with producer-licensees. As the result of this conference, E. R. P. I., in December 1928, agreed that the producer-licensees could distribute productions for reproduction on any equipment which, in the producer's judgment, gave results of satisfactory quality; but if they found, or E. R. P. I. demonstrated to them, that the quality was not reasonably up to the standard set by the Western sound system, then they would refuse distribution.

Although there appeared some indefiniteness after this settlement as to the meaning of the noninterchangeability provision of the license contracts, the amendment seemed to end its effectiveness against competitive equipment. In this connection it is significant to compare Western and non-Western installation of exhibitors' equipment at the end of 1928 and 1929. On December 29, 1928, there were 1,046

¹⁵ See ch. 8.

¹⁶ Letter dated October 17, 1928, from Paul D. Cravath to Walter S. Gifford, exhibit 332.

Western installations and 95 non-Western installations; whereas a year later there were 3,267 Western installations and 4,926 non-Western installations.

In agreements negotiated with exhibitors subsequent to November 1932, and in the new license agreements executed by E. R. P. I. with major producers in 1934 and 1935, the interchangeability provisions were omitted.

Royalties.—The second focal point of disaffection and complaint concerned the royalty provisions in the producer contracts. Again, R. C. A. was the spearhead in the attack on this provision, which read as follows:¹⁷

SECTION 1. * * * (b) In addition to the specific compensation and payments otherwise provided in this agreement to be made by licensee to Products, licensee shall (where sound records produced or distributed by licensee or its associated companies are made with the use of any of the technical information supplied by Products hereunder or by or with any equipment method, or system covered by any of the patents or embodying any of the inventions in respect of which any licenses are herein granted or agreed to be granted to Licensee) pay to Products the following royalties:

In substance, this clause provided that the producer-licensee must pay royalties to E. R. P. I. for sound records produced or distributed by it which were made (1) with the use of technical information supplied by E. R. P. I. or (2) with any equipment, method, or system covered by any patent or embodying any of the inventions under which licenses were granted by E. R. P. I. to its licensees.¹⁸ The provision was applied to recordings by R. C. A. equipment, even though under the 1926 cross-licensing agreement, both R. C. A. and E. R. P. I. were authorized to license the use of their respective equipment under all the patents of the radio group and the Bell System.

The manner in which this clause operated, causing the payment of double royalties to E. R. P. I. as well as its effect on R. C. A. is illustrated in the following circumstance: In the early part of 1930 one of R. C. A. producer-licensees distributed a picture through an E. R. P. I. producer-licensee. E. R. P. I. demanded of the latter a payment of royalty on the production. As a result of such demand, the E. R. P. I. licensee withheld moneys from the R. C. A. licensee. Thereafter, the R. C. A. licensee informed R. C. A. of the demand. R. C. A. agreed to reimburse its licensee for any payments to E. R. P. I. up to the amount of R. C. A. royalty on the production. R. C. A. also adopted the policy of giving indemnity agreements to licensees of E. R. P. I. that distributed R. C. A. recorded pictures.

R. C. A. charged that E. R. P. I.'s administration of the provision of its contracts was unjustified and illegal, and intimated that R. C. A. would be forced to file suit unless remedial action were taken. After a great deal of bickering by both sides, E. R. P. I. agreed to permit its licensees to distribute films produced on R. C. A. equipment without the payment of additional royalties to E. R. P. I. This understanding was incorporated in the 1932 cross-licensing agreement.

Such settlement, however, was silent on the E. R. P. I. producer-licensee's right to record on R. C. A. equipment without being liable to E. R. P. I. for additional recording royalties. There is very little

¹⁷ Metro-Goldwyn Pictures Corporation agreement, dated May 11, 1928, exhibit 304-A.

¹⁸ One reason for the insertion of such royalty clause in E. R. P. I.'s first license agreements with major producers was the protection of E. R. P. I.'s royalty situation: " * * * one reason for the use of this clause was to protect our royalty situation so that producer-licensees would not be able to secure licenses from others, including R. C. A. which would permit them to record through a separate company which might pay a royalty substantially less than that received by us from our licensees and use the present producers' licensees, and their organization as a distributing agency * * *." Memorandum for file, by E. J. Moriarty, dated December 3, 1930, exhibit 1689.

evidence before 1935 that E. R. P. I. licensees, R. C. A., or other competitors, were materially concerned with this question. In May 1935 R. C. A. delivered to E. R. P. I. a draft of a bill of complaint against American Telephone & Telegraph Co., Western, and E. R. P. I. in which R. C. A.'s demand for relief requested an adjudication that E. R. P. I. license contracts were illegal and void as violative of the Sherman Antitrust and Clayton Acts.

Following this threat of litigation, E. R. P. I. on October 10, 1935, sent letters to its producer-licensees waiving additional royalties by reason of such licensees producing sound records by the use of licensed equipment supplied by others than E. R. P. I. As interpreted by R. C. A., this waiver was limited to cases in which the sound record is produced solely with equipment supplied by others than E. R. P. I. After further negotiation, R. C. A. and E. R. P. I. formally executed an agreement waiving the requirements of the payment of additional royalty by their respective licensees on account of the patent license of, or information furnished by, the other party to the agreement. In view of this agreement, it is significant to note that in 1936 Warner Bros., Fox Film Co., and Columbia Pictures Corporation installed R. C. A. recording channels to supplement their Western equipment.

Service, repair, and replacement parts.—The third point of conflict concerned E. R. P. I.'s policies and practices in servicing equipment and furnishing repair and replacement of parts. The servicing of equipment was of significance in the reproduction field, because the initial E. R. P. I. exhibitor contracts provided for compulsory servicing. Servicing of recording equipment was not mandatory, but was rendered upon request.

From 1927 to 1934 exhibitor contracts executed by E. R. P. I. provided for compulsory periodical inspections and minor adjustments in equipment at a schedule of weekly charges fixed from time to time. E. R. P. I. did not set forth with any degree of definiteness or clarity its obligations in regard to furnishing service. Exhibitors vigorously protested the provisions of their contracts requiring compulsory service, particularly the charges for service. It was not until early in 1933, however, that a change in the provisions of exhibitor contracts occurred. On February 8, 1933, E. R. P. I. made available to its recording licensees a supplemental agreement, which would relieve them of compulsory servicing after the expiration of 2 years, on the condition that all charges payable under the original license agreement had been discharged by that date. In 1935 two new types of service contracts were offered, neither of which provided for compulsory servicing.

The yearly average number of theaters serviced by E. R. P. I., its yearly gross operating revenue and net profit, and yearly average service revenue per week, are shown in the following tabulation:

Year	Average theaters serviced	Gross revenue	Net profit	Yearly average revenue per theater per week	Year	Average theaters serviced	Gross revenue	Net profit	Yearly average revenue per theater per week
1928-----	451	\$946,000	\$70,000	\$40.34	1933-----	5,234	\$4,338,000	\$886,000	\$15.94
1929-----	2,101	3,372,000	125,000	30.86	1934-----	5,168	4,240,000	356,000	15.78
1930-----	4,122	5,526,000	1,103,000	25.80	1935-----	4,740	3,011,592	-269,620	12.22
1931-----	5,109	5,057,000	965,000	19.03	1936 ¹ -----	4,571	1,190,100	-129,700	5.00
1932-----	5,467	4,833,000	1,062,000	17.03					

¹ First 6 months.

² Before interest and reserve requirements.

From the above tabulation it is apparent that operating revenues and profits substantially declined in 1935 and the first half of 1936 after the introduction of optional service.

The first E. R. P. I. exhibitor contract forms provided that all additional or renewal parts should be obtained from E. R. P. I. at prices it might establish from time to time. In addition, the contracts provided that E. R. P. I. might determine the need for additional or renewal parts.

Exhibitors made many complaints concerning the high prices charged by E. R. P. I. for both repair and replacement parts and as to the quality of vacuum tubes supplied by E. R. P. I. The reasonableness of these complaints were admitted by E. R. P. I. in its inter-organization correspondence. The burden of high prices and poor quality was placed directly on Western and Bell Laboratories.

Exhibitors resorted to the use of competitive parts. By 1930 the use of competitive parts caused serious inroads on E. R. P. I.'s revenue. Further, it became apparent to E. R. P. I. in 1931 that it could not rely on the provisions of its contracts to require exhibitors to buy their repair and replacement parts from it.

In May 1932 a new exhibitors' form was introduced which did not contain requirements that the exhibitor must procure from E. R. P. I. all spare, additional, and replacement parts. The new contract did provide that E. R. P. I. would furnish parts and repairs ordered by exhibitors, and if the exhibitor ordered other than E. R. P. I.'s parts, the exhibitor waived any claim against E. R. P. I. with respect to the operation of the equipment. Further, this new contract provided that if break-downs were occasioned by reason of the use of non-E. R. P. I. parts and E. R. P. I. was requested to make repairs, the exhibitor should pay \$35 per day per man, plus transportation, for such service.

E. R. P. I.'s gross revenue from this business in 1930 was \$1,627,000. In 1931 it declined to \$857,000, and in 1932 it further declined to \$293,000. Such operations in 1932 resulted in a loss of \$60,000, or 20.5 percent of the gross revenue.

In 1933 E. R. P. I. inaugurated a new policy under which it agreed to furnish repair and replacement parts for Western equipment at a stated weekly sum, conditioned on the exhibitor using E. R. P. I.'s servicing arrangement then in effect. The results obtained from these new contracts were substantial. E. R. P. I. was able to reduce its loss on repair and replacement activities from \$144,000 in 1933 to \$12,000 in 1934, and succeeded in showing a profit of \$83,000 in 1935.

In December 1937 E. R. P. I. sold to the Altec Service Corporation (organized by former employees of E. R. P. I.) all of its contracts for servicing theater equipments and its contracts for furnishing repair and replacement parts on an annual fee basis.¹⁹

Litigation regarding trade policies and practices.—The provision of E. R. P. I.'s contracts with sound-motion picture producers and exhibitors and the administration of certain of these provisions have given rise to litigation between producers, exhibitors, and manufacturers of sound recording and reproducing apparatus and parts, on the one hand, and E. R. P. I., Western, and the American Co., on the other.

In 1936 there were pending against E. R. P. I. a number of suits brought by motion-picture producers and exhibitors to test the validity

¹⁹ Letter dated February 9, 1938, and attachments, from John H. Ray, counsel, American Telephone & Telegraph Co., to the Federal Communications Commission.

of the restrictive provisions in E. R. P. I.'s contracts under section 16 of the Clayton Antitrust Act. The total damages sought in all the suits was approximately \$175,000,000. Since that date two of these suits, involving more than half of the total alleged damages, have been dismissed as to Western and the American Co. and decided in favor of E. R. P. I., the sole remaining defendant. Eighteen additional suits have been settled on a nominal basis in relation to the demands asserted in the complaints.

On January 16, 1937, a decision was handed down in the case of *General Talking Pictures et al. v. American Telephone and Telegraph Co. et al.*, by the Hon. John P. Nields, judge for the United States District Court for the District of Delaware, wherein it was held that after the promotional period the so-called equality (noninterchangeability) clause and the repair and replacement clause were in violation of antitrust acts and were not enforceable by E. R. P. I., but injunctive relief was denied by reason of the practical abrogation or modification of these policies. The decision, in part, is as follows: ²⁰

It is axiomatic that there is no unlawful restraint of trade when there is no trade. It is equally true that there is no unlawful restraint of trade in studio or theater equipment when there is no competing equipment of adequate efficiency on the market. Equipment lacks adequate efficiency if it occasions or threatens break-downs. This was the condition of the market when the "equality clause" and the "repair and replacement clause" were first used in Products' licenses and leases. These clauses were essential to start the industry. Then they were not unlawful restraints of trade.

* * * * *

Upon the whole record the court finds that Products' licenses and leases made in the research and promotional period of the industry were not, and are not, illegal and void ab initio. The "equality clause" and the "repair and replacement clause" embodied in licenses and leases during the commercial period are illegal and void. In view of the practical abandonment of these clauses at the time of the hearing of these suits no injunction will issue in either suit. As to these clauses in licenses and leases now outstanding, the present holding of the court that they are void and of no effect should advise the trade that no damage or threatened injury can arise therefrom in the future. But the court will retain jurisdiction of these cases for the purpose of taking such other action or adding to its decree such relief as may become necessary and appropriate should any attempt be made by Products to enforce such clauses.

Apparent change in Bell System policy.—It appears from the decision of the court,²¹ that E. R. P. I. had for several years prior to 1936 made no attempt to enforce the provisions of its contracts with producers and exhibitors relating to noninterchangeability and repair and replacement parts.

E. R. P. I., by a contract dated December 4, 1937, transferred to the Altec Service Corporation (a corporation organized by former employees of E. R. P. I.) its service agreements relating to the rendering of service and the furnishing of parts in connection with sound-reproducing equipment. Altec, according to this agreement, is to take over certain of E. R. P. I.'s offices, testing equipment, and sound reproducing equipment parts, and is to act as E. R. P. I.'s agent in collecting unpaid capital charges on equipment leased for which compensation has not been received by E. R. P. I.²²

In September 1937 E. R. P. I. granted to General Theatres Equipment Co. and Motiograph, Inc., nonexclusive patent licenses to manu-

²⁰ 18 Fed. Supp. 650.

²¹ See *ibid.*

²² See p. 408 and note.

facture, or to have manufactured, lease, and sell, sound motion picture reproduction apparatus.²³

It thus appears that the effect of the new arrangements made in 1937 will be to remove the Bell System and its subsidiaries from direct activity in the manufacturing, sale, and servicing of sound motion-picture equipment, but the Bell System will, however, retain its position as licensor of the applicable patents owned by it.

E. R. P. I.'s Financial and Promotional Activities.

The primary interest of the Bell System in the motion-picture industry has been in the revenues derived from the supply of recording and reproducing apparatus used in the production and exhibition of sound motion pictures. It has not sought to build up an ownership or equity interest in the industry as an end in itself. In those instances in which it has acquired an ownership interest, or a creditor position, other than those arising out of the equipment business, the action has been for the purpose of promoting or retaining its hold on the apparatus market. The use of its creditor interest, and the acquisition of additional creditor or ownership interests not arising directly out of its main business, have been to complement and extend its other efforts to dominate the apparatus market.

E. R. P. I.'s financial and promotional activities were conducted through various agencies, principally Exhibitors Reliance Corporation, Eastern Service Studios, Inc., Audio Productions, Inc., General Service Studios, Inc., and E. R. P. I. Picture Consultants, Inc. The relationship between E. R. P. I. and these companies is discussed below.

Exhibitors Reliance Corporation.—This company was incorporated on May 15, 1929, by E. R. P. I. and Commercial Credit Corporation (through its subsidiary, Commercial Alliance Corporation) to relieve E. R. P. I. of some of the financing of deferred receivables in connection with the lease of sound motion picture equipment. In 1931 E. R. P. I. acquired complete ownership. By December 31, 1932, all of its accounts with E. R. P. I.'s licensee exhibitors were liquidated. Since complete acquisition by E. R. P. I., Exhibitors Reliance Corporation has engaged in the following additional activities:

(1) Supply of working capital to E. R. P. I. recording licensees; (2) financing of motion-picture productions. Exhibitors Reliance Corporation was merged into E. R. P. I. in May 1936.

Eastern Service Studios, Inc.—On October 14, 1929, E. R. P. I. negotiated a recording license agreement in the industrial field with Audio-Cinema, Inc. Thereafter, on January 7, 1930, E. R. P. I. granted Audio-Cinema a license to record in the theatrical field. Audio-Cinema's operations were not financially successful. In 1931 it filed a petition in bankruptcy. E. R. P. I. was its principal creditor. A reorganization followed in February 1932 which resulted in the organization of Eastern Service Studios as a subsidiary of Audio-Cinema to take over the latter's studio assets. Eastern Service Studio Inc.'s entire voting capital stock was pledged to E. R. P. I. as security for Audio-Cinema's payment of indebtedness to E. R. P. I. This pledge accorded E. R. P. I. the right to purchase the stock of Eastern Service Studios. In June 1935 E. R. P. I. exercised its right to purchase the stock of the former, and Eastern Service Studios became a wholly

²³ Letter dated November 26, 1937, and attachments, from Keith S. McHugh, assistant vice president American Telephone & Telegraph Co., to Federal Communications Commission.

owned subsidiary of E. R. P. I. In May 1936 Eastern Service Studios was merged with General Service Studios.

In connection with the various transactions with Audio-Cinema, E. R. P. I., in June 1935, through Exhibitors Reliance Corporation, acquired Audio Productions, Inc., which, after its incorporation in 1933, became the sole licensee of E. R. P. I. in the industrial motion picture field in New York City.

General Service Studios, Inc.—This company was organized in November 1933 by Eastern Service Studios, Inc., through financial assistance of Exhibitors Reliance Corporation, to take over studio properties of Western Service Studios, Inc. (formerly called Educational Talking Pictures Co., Ltd.). In June 1935 General Service Studios, Inc., became a wholly owned subsidiary of E. R. P. I. Educational Talking Pictures Co., Ltd., was organized by E. R. P. I. as a subsidiary of Educational Pictures, Inc., in June 1931 to acquire the latter's studio properties and those of Metropolitan Sound Studios, a subsidiary of the Christie Film Co., Inc. The latter company became an E. R. P. I. licensee in June 1928 and by 1930 was heavily indebted to E. R. P. I. and others.

E. R. P. I. Picture Consultants, Inc.—This company was organized in 1931 by Exhibitors Reliance Corporation to render consulting services in connection with the production of motion pictures. It became a wholly owned subsidiary of E. R. P. I. in 1932. For the most part it has engaged in the promotion and production of educational motion pictures.

Purposes of E. R. P. I.'s financial and promotional activities.—E. R. P. I.'s purpose in undertaking the various steps which eventually led to its acquisition of studios may be summarized as (1) development of nontheatrical business; (2) protection of its creditor relationship with producer-licensees; (3) provision of adequate studio facilities for the use of independent producers of theatrical motion pictures as a part of a program to encourage the use of Bell System sound-recording apparatus to the exclusion of competing equipment; (4) protection of its position against competitors in the sound motion picture field; and (5) increase of its revenues through the lease of equipment and royalties. Its objectives in motion-picture financing were (1) to increase royalty; (2) to lease additional equipment; (3) to assist E. R. P. I. licensees; (4) to increase E. R. P. I.'s prestige in the sound motion-picture business; and (5) to compete more effectively with recording studios equipped with R. C. A. or so-called "bootleg" apparatus.

Picture production financial assistance.—In addition to acquiring and operating the studios, as described in the preceding subsections E. R. P. I., in June 1932, with Western's approval, set up a fund of \$500,000 to finance the production of pictures. The fund was increased to \$650,000 on May 24, 1933, and to \$800,000 in June 1933.²⁴ Financing activities were carried on by Exhibitors Reliance Corporation, under contracts designed to afford E. R. P. I. utmost protection, in return for which charges covering interest, commission, expenses, etc., but not including any costs incurred because of overages, were confined to 1 percent per month, with no speculative interest in profits of productions.

²⁴ In April 1932 Exhibitors Reliance Corporation had \$725,000 in idle funds.

By January 23, 1935, Exhibitors Reliance Corporation and E. R. P. I. had furnished financial assistance for the production of 13 feature-length productions released through major producers; 20 feature-length pictures and 102 short subjects made by Educational Films Corporation or its subsidiaries; 26 industrial shorts produced by Wilding Picture Productions, Inc.; 16 industrial shorts and 34 "Musical Moods" produced by Audio Productions, Inc.; and 29 short subjects made at Eastern Service Studio.

E. R. P. I. Picture Consultants, Inc., in cooperation with the University of Chicago and Yale University, has produced and retained sole title to 59 so-called educational pictures concerning physical science, plant life, etc. E. R. P. I. has also produced 18 pictures depicting the development of sound as applied to motion pictures.

Total advances made by Exhibitors Reliance Corporation through December 31, 1935, amounted to approximately \$4,000,000, of which almost \$900,000 was outstanding on that date.

Results of E. R. P. I.'s financial and promotional activities.—Revenues earned by E. R. P. I. to December 31, 1935, in connection with motion-picture activities, included royalties in the amount of \$397,851 and interest on advances totaling \$327,399.

The operating results of the principal companies through which E. R. P. I. conducted its financial and promotional activities are set forth in the following tabulation:

	Profit	Loss
General Service Studios, Inc.		\$345,701
Eastern Service Studios, Inc.		\$21,230
Audio Productions, Inc.		\$154,094
E. R. P. I. Picture Consultants, Inc.		\$706,299
Exhibitors Reliance Corporation, Inc.	\$518,482	

1 For years 1933-35, inclusive.

2 Feb. 11, 1931, to Dec. 31, 1935.

3 May 1929, to Dec. 31, 1935.

Although four of these companies operated at a loss, their activities in this field produced additional revenues in the form of royalties and interest on advances, and they obtained the business of independent producers and maintained facilities for the production of industrial films.

On the competitive side, E. R. P. I. executives made the claim in September 1933 that the "successful" operation of Eastern Service Studios, Inc., had driven out of business all studios licensed by R. C. A., as well as practically all of the "bootleggers" in the East.²⁴

The successful operation of this studio has driven practically all of the bootleggers in the East out of business and also the studios licensed by R. C. A. R. C. A. formerly had four such studios which are not now operating.

* * * * *

* * * Through our financing pictures we have gotten a steadily increasing proportion of the business and have left R. C. A. with little or no income from royalties except in connection with studios owned and operated by themselves.

Relations between E. R. P. I. and the Fox interests.—A further example of E. R. P. I.'s financial activities in the sound motion-picture field is to be found in its transactions with the Fox interests. Fox had, from a very early date, manifested a decided interest in sound

²⁴ Letter from J. E. Otterson to E. S. Bloom, dated September 14, 1933, exhibit 500.

pictures and did not join other major motion-picture producers who decided to postpone their introduction. This attitude resulted in very amicable and cooperative relations between Fox and its licensor, E. R. P. I.

In 1929 Fox requested from E. R. P. I. a loan of \$12,000,000, to be used in purchasing a chain of theaters and a substantial block of stock in Loew's, Inc., which controlled the motion picture producing company of Metro-Goldwyn Pictures, Inc. E. R. P. I. had previously assisted Fox in other ways. In view of its creditor position and to retain the Fox interests as a real competitor of the other large producers and thereby be assured of a large theater chain to which Western's apparatus could be sold, it was decided to grant the request.²⁶ Accordingly, E. R. P. I. borrowed \$15,000,000 from Western, which in turn borrowed \$12,000,000 from the American Co. on the same day. The \$15,000,000 was then advanced to the Fox Theaters Corporation.

Following the consummation of the Loew transaction by Fox, E. R. P. I. sought to create a European market for its sound picture apparatus, which met with strong resistance because of the European patent situation. In order to present a stronger bargaining position, E. R. P. I. desired that American producers withhold distribution of their sound pictures in Germany for reproduction on foreign equipment. At this time Fox through its ownership of rights to the Tri-Ergon patents (for recording sound on films), failed, according to E. R. P. I., to cooperate in this respect, which resulted in strained relations between the two concerns.

The market crash in the fall of 1929 and other factors brought about a critical financial condition in the Fox companies. As a collapse of the Fox companies would seriously jeopardize the recovery by E. R. P. I. of the \$15,000,000 indebtedness due February 26, 1930, together with other indebtedness, it was represented on a board of trustees appointed to refinance the Fox interests. At this time E. R. P. I., and Halsey, Stuart & Co., Inc., endorsed notes of Fox to the Bankers Trust Co., in the sum of \$4,000,000, E. R. P. I.'s share being close to \$2,000,000. Upon the purchase of Fox interests by Harley Clarke, a utilities operator, E. R. P. I. loaned Clarke \$5,000,000, and Halsey Stuart & Co., Inc., \$9,775,000, and was thereby relieved of its guaranty to the Bankers Trust Co. E. R. P. I. received payment of its \$15,000,000 loan to Fox coincident with the making of the above loans.²⁷ The loans by E. R. P. I. to Clarke and Halsey, Stuart & Co., Inc., were liquidated within 1 year.

The Bell System, through the Weco Corporation, a wholly owned subsidiary of Western, purchased \$8,500,000 of a \$20,000,000 issue of 6-percent gold notes offered by the Film Securities Corporation (a corporation organized to acquire the Fox interests in the stock of Loew's, Inc.). April 1, 1933, Film Securities Corporation defaulted on the issue and the noteholders of the Weco Corporation acquired a pro rata part of such stock at public auction.

Following Weco Corporation's acquisition of the Loew's, Inc., stock, Western issued a public statement that it had "no intention of maintaining a permanent interest in any stock of any motion picture company."²⁸ By December 31, 1935, this stock was completely

²⁶ The inducements for making this loan are summarized on p. 475, exhibit 1946-B.

²⁷ See exhibit 1946-B, p. 487.

²⁸ Letter from F. L. Thomson to John E. Otterson, dated December 29, 1933, with news release dated December 27, 1933, attached, exhibit 1855.

disposed of by the Bell System through brokers. Profit on the acquisition and sale of Loew's, Inc., stock by the Weco Corporation, according to its books, totaled \$1,874 751.45.

E. R. P. I.'s Operating Revenues and Profits.

Western transferred to E. R. P. I. at the time of its incorporation assets aggregating \$40,121,519 and liabilities in the amount of \$59,696. In addition, Western paid E. R. P. I. \$1,000,000 in cash, and in return E. R. P. I. issued to Western its entire authorized capital stock, consisting of 750,000 shares of no par value. E. R. P. I., therefore, commenced business with a surplus of \$40,061,570. The assets transferred to E. R. P. I. were predominantly nonutility investments and marketable securities, but included accounts receivable relating to the business transferred by contract of December 30 1926.

The principal source of E. R. P. I.'s operating revenues has been the domestic motion-picture industry; the supply of recording and reproducing equipment and collection of royalties on the sound film printed for release by producers

During the years 1927 to 1935, inclusive, E. R. P. I. gross operating revenues totaled \$152,029 326. For the same period, gross operating revenues from motion-picture sound reproduction, including furnishing of equipment, service, and maintenance, deferred financing, and industrial-picture distribution, totaled \$94,851,251, or 62.39 percent; while gross operating revenues from motion-picture sound recording, including furnishing of equipment, service and maintenance, and royalties, amounted to \$28,479,902, or 18.73 percent.

E. R. P. I.'s net profits during the years 1927-35, inclusive, totaled \$28,112,880, of which \$8,207,238 was derived from regular operations and \$19,905,642 represented special profits.²⁹

The American Telephone & Telegraph Co. has received 33½ percent of the royalties from recording in the United States after deducting the participation of others than E. R. P. I.³⁰ Royalties paid direct to the American Co. in connection with sound motion pictures for the years 1927-35, inclusive, totaled \$4,266,909. Such royalties are treated by the American Co. as a "windfall" and are not credited to research expense.³¹

The American Co. receives * * * from E. R. P. I. * * * a 33½ percent royalty for the talking motion-picture equipment. * * *

Now we have not known just how to deal with this item because that's a sort of a windfall to the American Co. from its prosecution of these license-contract activities. * * *

In this connection, reference may be made specifically to the treatment of research expense for photoelectric cells. As stated in chapter 7, expense of research on photoelectric cells, one of the many devices essential to sound motion pictures, was charged completely to the American Co. It thereby became a part of the Bell System's alleged cost of furnishing telephone service, although H. P. Charlesworth, vice president of the Bell Telephone Laboratories, suggested that a

²⁹ Special profits included, among others, investment in Graybar stock, investment in Northern Electric Co., marketable securities, revaluation of war claims.

³⁰ Vitaphone has participated in domestic recording royalties as a result of the cancellation of the Vitaphone exclusive license contract (see p. 402) in 1927. Northern Electric Co., Ltd., participates in royalties from domestic recording distributed in Canada.

³¹ Testimony of A. B. Crunden, assistant comptroller, American Telephone & Telegraph Co., before Maryland Public Service Commission, 1933, record pp. 1529-1532; Re *Chesapeake and Potomac Telephone Co. of Baltimore City*, 1 P. U. R. (N. S.) 346. See also chs. 6, 7, and 8.

part of the cost of research on photoelectric cells should be properly chargeable to E. R. P. I. since the increased program undertaken in 1929 was "aimed specifically at cells and sound motion-picture work."³²

Summary

This chapter has reviewed the activities of the Bell System companies in fields outside the furnishing of communication service. Certain of these fields were made available to it through the development or acquisition of patents essential to other fields. In relation to the communication business as a whole carried on by the Bell System, the activities have been relatively unimportant; however, in relation to the particular noncommunications fields involved they have, in some instances, been a very important factor.

The events described in this chapter would seem to indicate that the American Co. has always preferred to adopt the position of licensor under its patents in the noncommunications fields, leaving the commercial exploitation of such patents to others. Commercial development of sound reproduction was originally proposed on a licensor basis through agreement with Vitaphone. Subsequently, E. R. P. I. entered the field directly. E. R. P. I.'s activities in this connection are now largely limited to licensing others to manufacture, use, and sell devices employing Bell System patents. No loss has been suffered as a result of activities in the noncommunications fields measured on the basis of direct expenditures and revenues received.

³² See ch. 7, pp. 202-203.

CHAPTER 15

FINANCING OF THE BELL SYSTEM

The growth of the Bell System to a magnitude comprising 5 billions of gross assets, within a period of half a century, has necessarily required large amounts of financing. It is the purpose of this chapter to indicate and discuss the methods, the instrumentalities, and the conditions under which the financial requirements of the Bell System have been met. The major sources of the capital in use at any given time are, in general, characterized by the different items of liabilities shown in the balance sheet. A brief historical view of the sources of funds is presented, therefore, by an analysis of the proportion of different items of liability, from time to time, in the balance sheets of the American Bell Telephone Co., the American Telephone & Telegraph Co., and the associated Bell Telephone companies. This is given in section 1 of this chapter.

The management of the American Co. views the Bell System as a financial and operating unit. A summary of the financial requirements and resources of the system as a whole is, therefore, presented in section 2. This shows the extent to which the parent company of the Bell System has financed the operating companies by advances on notes and open accounts, which have been largely converted later into common stock of the associated companies. Upon further analysis of the sources of funds employed in the Bell System, it is disclosed that in addition to the internal resources such as funds provided from operations represented by depreciation reserves and surplus, the System has resorted, to some extent, to the issue of associated company and American Co. bonds, and, to a larger extent, of American Co. common stock. In sections 3 and 4 of this chapter, therefore, the methods of bond and common stock financing are discussed. Some of the significant features and results of the Bell System's financial practices are then discussed in section 5.

SECTION 1. SUMMARY OF CAPITALIZATION

The capitalization of the Bell System, as of December 31, 1935, on the basis of consolidating the accounts of the American Co. and the 23 associated Bell Telephone companies, and of the American Co. and the combined associated companies, respectively, as of the same date, has been presented in section 2 of chapter 3. It was there pointed out that, as of that date, approximately three-fourths of the Bell System's total capitalization represented stockholders' equity, while long-term debt accounted for only a little over one-fourth. In the case of the American Co., capital stock equity represented 84 percent of the total capitalization and long-term debt 16 percent. For the 23 associated companies combined approximately 77 percent of the capitalization was represented by capital-stock equity and almost 23 percent by long-term debt.

The Parent Companies.

A historical view of the capitalization of the parent company of the Bell System, on the one hand, and of associated Bell Telephone companies, on the other, indicates that this conservative method of financing—that is, financing principally through stock issues, with a relatively small proportion of funded debt—has been characteristic of the system ever since its inception. This is apparent from table 60, page 419, which gives the percentage composition of the assets and liabilities of American Bell Telephone Co., and American Telephone & Telegraph Co. from 1881 to December 31, 1935, at 5-year intervals. Up to 1900 long-term debt was an insignificant proportion of total liabilities, whereas common stock, installments on subscriptions, and unappropriated surplus represented more than 90 percent of the total liabilities on the balance sheet during practically the whole period from 1881 to 1900. After 1900 a considerable amount of long-term debt financing was undertaken, but seldom did it reach over a third of the total liabilities, and since 1930 it has been less than a sixth of total capitalization. Since 1900 common stock, installments on subscriptions, reserves for contingencies, and unappropriated surplus—in short, common-stock equity of the American Co.—have usually represented more than 50 percent of total liabilities; indeed, between 60 and 70 percent most of the time.¹

The Associated Companies.

The percentage composition of the liabilities of associated companies on a combined basis presents a similar picture. In this case it is well to remember that, whereas the principal assets of the parent company consisted of investments, those of the associated companies have been in the form of telephone plant and equipment. Furthermore, a large proportion, over 90 percent on an over-all basis, of the common stock of the associated companies was and is owned by the American Co., which in turn has had its own common stock outstanding in the hands of the public.

The percentage composition of assets and liabilities of associated Bell companies as of December 31, 1907, and 1910 to 1935, inclusive, at 5-year intervals, is shown in table 61. This table gives the same picture, with slight variations, as the balance-sheet data of the parent company just discussed. In short, the preponderant method of financing is by capital stock. Capital-stock equity has always represented more than half of the combined capitalization of the associated companies, in recent years increasing to 70 percent or more.² Funded debt seldom has exceeded 30 percent of total liabilities. Advances from the American Co. have fluctuated considerably, but since these advances were in a continual state of flux, being in the process of conversion mainly into common stock issued to the American Co., we may, for purposes of this discussion on methods of financing, consider advances purely a preliminary step to equity financing by the American Co.³

In brief summary, the capitalization of the Bell System has been characterized by (1) an absence of pyramiding of security issues with different degrees of priority; and (2) a preponderance of equity financ-

¹ See exhibit 1360-B, schedules 1 and 2.

² See exhibit 1364, schedule A-1.

³ The relationship between advances from the American Co. to the associated companies and the issuance of associated company common stock to the American Co. is considered in greater detail in sec. 2 of this chapter.

ing. These conditions create a safety and stability from the point of view of investment risk which should reflect in the ability of the system to obtain capital upon reasonable terms.

TABLE 60.—Percentage composition of assets and liabilities of American Bell Telephone Co. and American Telephone & Telegraph Co. from 1881 to Dec. 31, 1935, at 5-year intervals

ASSETS								
As of Dec. 31—	Total	Telephone plant and equipment			Investments	Current assets		Deferred debits, and sinking funds
		Book cost	Depreciation reserve	Net book cost		Cash, deposits, and marketable securities	Other current assets	
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)
1881 ¹	100	80.89	-----	80.89	14.74	1.24	3.13	-----
1885.....	100	3.48	0.50	2.98	91.32	4.10	1.59	0.01
1890.....	100	17.07	6.75	10.32	82.55	.63	6.36	.14
1895.....	100	28.68	7.34	21.34	69.74	2.85	6.07	-----
1900.....	100	21.80	.53	21.27	74.04	1.08	3.61	-----
1905.....	100	18.44	.40	18.04	77.19	2.60	2.17	-----
1910.....	100	12.20	1.56	10.64	85.21	2.72	1.43	(²)
1915.....	100	10.82	2.32	8.50	84.53	4.91	2.04	.02
1920.....	100	13.24	3.00	10.24	85.82	2.87	1.02	.05
1925.....	100	12.16	2.83	9.33	85.23	4.63	.87	.04
1930.....	100	13.90	1.87	12.03	74.67	12.53	.70	.07
1935.....	100	15.04	3.27	11.77	80.07	7.32	.74	.10

LIABILITIES

As of Dec. 31—	Total	Common stock and installments received on subscriptions	Premiums on common stock	Long-term debt		Current liabilities, deferred credits, and miscellaneous reserves	Reserve for contingencies	Unappropriated surplus
				Funded debt	Employees' benefit and pension fund liability			
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)
1881 ¹	100	73.27	-----	3.64	-----	3.01	-----	20.08
1885.....	100	39.62	1.19	-----	-----	2.61	-----	56.58
1890.....	100	36.22	2.05	5.79	-----	4.57	-----	51.37
1895.....	100	43.47	4.26	4.04	-----	5.83	-----	42.40
1900.....	100	57.38	-----	20.08	-----	4.43	16.29	1.82
1905.....	100	53.00	.01	31.43	-----	2.93	8.37	4.26
1910.....	100	54.56	5.79	24.06	-----	4.39	6.20	5.00
1915.....	100	62.49	7.07	19.74	0.33	2.79	2.14	5.44
1920.....	100	47.74	5.17	34.22	.22	4.15	3.25	5.25
1925.....	100	59.30	3.43	24.22	.44	3.23	2.87	6.51
1930.....	100	61.43	8.35	14.90	.37	2.49	2.08	10.38
1935.....	100	64.49	9.26	15.29	.38	2.01	2.23	6.34

¹ As of Feb. 28, 1881.

² Less than 0.01 percent.

Source: Computed from data in exhibit 1360-B, schedules 1 and 2.

TABLE 61.—*Percentage composition of assets and liabilities of associated Bell Telephone companies as of Dec. 31, 1907, and 1910 to 1935, inclusive, at 5-year intervals*

ASSETS									
As of Dec. 31— (a)	Total (b)	Telephone plant and equipment			Investments (f)	Advances to connecting companies (g)	Current assets		Deferred debts, and sinking funds (j)
		Book cost (c)	Depreciation and amortization reserves (d)	Net book cost (e)			Cash and deposits (h)	Other current assets (i)	
1907.....	100	86.34	1.67	84.67	4.41	-----	1.20	9.72	-----
1910.....	100	92.66	7.69	84.97	4.68	-----	2.26	8.09	-----
1915.....	100	104.35	15.88	88.47	3.62	0.89	1.93	4.53	0.56
1920.....	100	108.34	23.63	84.71	4.55	2.19	1.23	6.39	.93
1925.....	100	111.79	22.67	89.12	2.62	.45	1.08	5.11	1.62
1930.....	100	111.68	20.56	91.12	2.75	.08	.91	4.01	1.13
1935.....	100	120.23	30.34	89.89	3.40	.07	1.73	4.35	1.56

LIABILITIES								
As of Dec. 31— (a)	Total (b)	Capital stock (c)	Long-term debt			Current liabilities, deferred credits, and miscellaneous reserves (g)	Reserved surplus (h)	Unappropriated surplus (i)
			Funded debt (d)	Advances from American Telephone & Telegraph Co. (e)	Employees' benefit and pension fund liability (f)			
1907.....	100	65.64	6.86	12.87	-----	8.10	-----	6.53
1910.....	100	62.60	19.60	4.98	-----	6.86	-----	5.96
1915.....	100	54.09	28.98	8.02	0.88	2.95	0.51	4.57
1920.....	100	47.86	25.53	14.94	.62	5.85	.37	4.53
1925.....	100	55.40	23.59	10.90	1.10	4.51	.99	3.51
1930.....	100	59.34	17.22	9.65	2.16	4.56	.55	6.52
1935.....	100	69.03	14.63	3.65	3.59	4.33	.67	4.10

¹ Computed on the basis of excluding from sinking funds and long-term debt \$44,000,000 representing Southwestern Bell Telephone Co. bonds, and their proceeds, to be applied to payment of other bonds called for redemption Feb. 1, 1936.

Source: Computed from data in exhibit 1364, schedule A-1.

SECTION 2. CENTRALIZATION AND VOLUME OF FINANCING

Under the terms of the original permanent-license contracts, the Bell licensees were usually restricted from borrowing money or reinvesting profits without the consent of the licensor, and the funds required for extension and development of their business were to be obtained principally through the issuance of capital stock.⁴ The general policy of issuing permanent licenses was adopted shortly after the organization of American Bell Telephone Co. in 1880, and the above-mentioned restrictions contained in these agreements indicate the intention of the licensor to supervise the financial policies of the licensees. Since about 1900 the financing of the Bell System has been centralized in the American Co. The larger part of the requirements of the associated companies is met by advances from the

⁴ See exhibit 1362-A, pp. 6-7, and exhibit 2114, p. 34.

parent company, which are usually converted into equity securities. This practice developed gradually after 1895, and apparently became a general policy shortly after 1900. A comparatively small proportion of financial requirements is obtained by bond issues of associated companies. Even in this case, however, the bond issues are undertaken with the assistance and advice of the American Co.; in fact, the American Co. goes so far as to negotiate with the bankers and sign contracts for the associated companies in the sale of bonds.⁵ The controlling stock interest of the American Co., of course, explains its assumption of management functions in the financing of associated companies. The American Co. has claimed that it is obligated to render such financial assistance under the provisions of the license contract.⁶

The financial requirements of the Bell System as a whole are estimated by the American Co. In this respect the system is viewed as a single operating entity. This programming of financial requirements by the American Co. is based upon forecasts of requirements made by the constituent members of the system and transmitted to the American Co. for summarization, criticism, and integration into a forecast of the requirements of the system as a whole. With such information as a basis, the American Co. plans the ways and means by which it to meet the demand for new funds. The forecasts of the associated companies and of long lines are called provisional estimates. Formerly there were several estimates of forecasts made annually for varying lengths of time into the future from 1 to 5 years. The long-term view, that is, the 5-year forecast of requirements, was given up during the depression of the early thirties. Now a short-term forecast, usually 1 year, is used. The American Co. makes a summary estimate of financial requirements based upon the information transmitted to it by the associated companies, modified by the best judgment of the headquarters staff in New York.

After determining the gross financial requirements of the succeeding year or two, the American Co.'s estimate takes into account all the internal sources of funds that may be depended upon to supply part of the requirements. In this way the net financial requirements that must be met from external sources are determined. Then it becomes a question of whether these net requirements should be met by the issue of associated-company bonds, American Co. bonds, or American Co. stocks, the three principal methods of financing. An examination of the calculations made by the comptroller of American Telephone & Telegraph Co., to determine the particular type of financing to be undertaken, indicates that the method chosen is the one that will contribute to raising or keeping the return on the American Co.'s stock to a little over \$11 per share, if at all possible.

Financial Requirements, Resources, and Financing of the Bell System Prior to 1913.

Inasmuch as most of the initial investments of the American Co.'s predecessors consisted of license stock, it is evident that the early capital requirements of the associated companies were supplied principally by the other stockholders or through sales of long-term debt. After American Bell waived its right to receive license stock,

⁵ See ch. 4, sec. 2.

⁶ See ch. 6, pp. 162-163. See also exhibit 1359, pp. 28-31.

it began contributing its pro rata share of capital to most of the licensees by subscribing to its proportion of their stock offers. Gradually American Bell and the American Co. purchased stock of the licensees held by others, so that by 1912 the latter held large controlling capital-stock interests in all but a few of them. Following is a brief discussion of the financing of the American Co. and its predecessors and of the associated companies, respectively, prior to 1913.

American Co. and its predecessors.—The financial requirements of the American Co. and its predecessors to December 31, 1912, the funds available from internal sources, the net financial requirements, and the financing effected to obtain the funds required to meet the net requirements, are summarized below:

Particulars	Amount	Percent of total
Financial requirements:		
Investments ¹	\$518,950,000	63.71
Property, telephone plant, and equipment ²	61,960,000	7.61
Current and other assets.....	25,850,000	3.17
Retirements of long-term debt.....	207,760,000	25.51
Total.....	814,520,000	100.00
Internal resources:		
Surplus.....	92,030,000	11.30
Depreciation reserves.....	11,130,000	1.37
Current liabilities and miscellaneous reserves.....	12,060,000	1.48
Total.....	115,220,000	14.15
Net financial requirements.....	699,300,000	85.85
Financing:		
Stock sales, including \$100,511,000 par value issued to retire convertible bonds.....	356,675,000	43.79
Long-term debt sold, including \$30,500,000 obligations assumed.....	291,445,000	35.78
Short-term advances from associated and other Bell System companies.....	51,180,000	6.28
Total.....	699,300,000	85.85

¹ Includes license stock received from associated companies and revaluations of investments for which the offsetting net credit is included in surplus and reserve for contingencies.

² Does not include initial expenditures for property, plant, equipment, and patents which had been charged off to expense or surplus and were thus recovered from earnings.

Source: Exhibit 1360-B, schedules 1, 2, 27, 27A, 27B, 29, 29A, 29B, and 29C.

Total financial requirements indicated in the foregoing tabulation were \$814,520,000. Internal resources provided for \$115,220,000, or 14 percent of this amount, and the balance of \$699,300,000 was financed through sales of capital stock and long-term debt (including stock issued to retire convertible bonds, and long-term debt assumed, respectively) and short-term borrowings from Bell System companies. With respect to the funds available from internal sources, approximately 90 percent represented by the balances in surplus and depreciation reserves was provided from earnings.

In connection with the financing transactions, the amount of \$356,675,000 was provided from sales of stock, including the value assigned to 1,005,110 shares issued to retire convertible bonds. Funds from the sales or assumption of long-term debt were \$291,445,000, but \$207,760,000 was required for retirements of such debt, including capital stock issued for that purpose, thus leaving a net amount of only \$83,685,000 from long-term-debt financing as compared with \$356,675,000 from the issuance of stock.

Associated Bell Telephone companies.—In view of the number of companies involved and the numerous reorganizations, mergers, and consolidations effected, detailed analyses of the securities issued and retired by all of the associated companies and their predecessors prior

to 1913 were not made in connection with the special telephone investigation. However, the following tabulation, summarized from the combined balance sheets of these companies as of December 31, 1912, indicates, in a general way, the sources of the funds in use at that date.

Particulars	Amount	Percent of total
Combined gross assets:		
Plant and equipment, including intangibles.....	\$705,286,000	85.90
Investments and advances.....	40,112,000	4.88
Current and other assets.....	75,672,000	9.22
Total.....	821,072,000	100.00
Internal sources of funds represented by:		
Surplus.....	30,324,000	3.69
Depreciation reserves.....	81,328,000	9.91
Current liabilities and miscellaneous reserves.....	37,951,000	4.62
Total.....	149,603,000	18.22
Balance.....	671,469,000	81.78
Sources of funds for financing above balance:		
Common and preferred stocks.....	419,863,000	51.14
Funded debt.....	190,982,000	23.26
Advances from American Co.....	60,624,000	7.38
Total.....	671,469,000	81.78

Source: Exhibit 1364, schedule A-1.

It will be observed that the portion of the funds provided from earnings equivalent to the amount of the depreciation reserves was approximately 10 percent of the total gross assets, while other internal sources of funds were about $8\frac{1}{2}$ percent, leaving over 80 percent to be provided for through financing. Common and preferred stocks outstanding were equal to 51 percent of gross assets, outstanding funded debt 23 percent, and advances from the American Co. 7 percent. It will be noted that outstanding capital stock was more than double the face amount of the funded debt outstanding, indicating the predominance of equity financing.

Financial Requirements, Resources, and Financing, 1913-35.

Summaries of the financial requirements, resources, and financing of the Bell System for the years 1913 to 1935, inclusive, and of the associated companies for the years 1923 to 1935, inclusive, are presented in tables 62 and 63, respectively.⁷ The total financial requirements shown in these tables represent the funds expended for the increased investment in assets during the period and the cash required to retire maturing obligations. They do not include additional expenditures for plant additions equal to the amount of retirements made during the period or the principal amount of convertible bonds retired through conversion into capital stock. If these additional plant expenditures were included in total requirements they would be offset by increased internal resources, represented principally by depreciation reserve provisions, and the inclusion of the face amount of bonds retired through conversion into capital stock as a part of the requirements would necessitate showing a corresponding increase in the amount shown as financing effected through capital-stock sales, instead of including only the cash premiums on the stock issued for

⁷ These tables are on pp. 425 and 426, respectively.

that purpose. A brief discussion of these tables is contained in the following paragraphs.

Bell System.—As indicated in table 62, from 1913 through 1935 the System as a whole had financial requirements of \$4,714,000,000 of which \$3,522,000,000 was for net additions to telephone plant. Of the total financial requirements, \$968,000,000 or 20.5 percent, was provided from earnings by increases in depreciation reserves, and some \$326,000,000, or somewhat less than 7 percent, by undivided profits.⁸ These two items, representing the major part of the internal resources, equaled 27.5 percent of total financial requirements and nearly 37 percent of the net additions to telephone plant during the period. The net financial requirements to be met from other sources during this period were \$3,191,000,000, or nearly 68 percent of total requirements. Only \$906,000,000, or 28.4 percent of the net financial requirements, was met by outside financing of associated companies.⁹ On the other hand, \$2,515,000,000, or almost 79 percent of net financial requirements, was met by American Co. financing.

The account of the growth of the Bell System in chapter 2 showed clearly that the greatest expansion of the system came after the post-war depression of 1921, and spanned the 10-year period ending with 1931. Total financial requirements from January 1, 1923, to December 31, 1931, were \$3,061,000,000, of which \$2,532,000,000 represented net additions to telephone plant. Thus, approximately 65 percent of total financial requirements and 72 percent of net additions to telephone plant during the 23-year period from 1913 to 1935, inclusive, came during the 9-year period 1923 to 1931, inclusive. Again, \$932,000,000, or 30.5 percent of gross requirements, was met through internal resources. Undivided profits, including surplus adjustments, and depreciation reserves, both of which came from earnings, represented the most important internal sources of funds, the two together being sufficient to supply some \$822,000,000, or almost 27 percent of total requirements and over 32 percent of net additions to plant. If notes sold to pension-fund trustee, which can also be considered an internal source of funds, are added, then over 30 percent of total requirements and over 35 percent of plant additions were met from these internal resources. The net financial requirements during the 9-year interval were \$2,128,000,000. Deducting from this, notes of associated companies sold to pension-fund trustee of \$86,000,000 and notes of the American Co. sold to pension-fund trustee of \$13,000,000, as being internal resources, the net financial requirements to be met from outside sources of funds amounted then to \$2,029,000,000. Over 18 percent of this was met by associated companies' securities sold to the public. The rest was provided by American Co. financing. This company therefore supplied by far the largest portion of the financial requirements of the Bell System.

The foregoing discussion treated of the financial requirements of the Bell System on a consolidated basis. To obtain a clearer picture of the process by which the Bell System telephone business is financed, it is necessary to regard the associated companies separately, for only in this manner is it possible to analyze the relations of the American Co. to the associated companies in the matter of financing.

⁸ See table 62, p. 425, items B-1 and B-2. Gross undivided profits for the period 1913-1935, inclusive, were \$371,039,332. Surplus adjustments of \$44,941,290 left net profits of \$326,198,042.

⁹ Of this amount \$114,000,000, or 3.59 percent of net requirements, was met by notes sold to pension-fund trustee, which may be considered an internal source of funds, since the pension-fund accruals were charged to operating expenses.

TABLE 62.—Summary of financial requirements, resources, and financing of Bell Telephone System in United States, and percentage distribution, Jan. 1, 1913, to Dec. 31, 1935

Particulars (a)	23 years, Jan. 1, 1913, to Dec. 31, 1935		13 years, Jan. 1, 1923, to Dec. 31, 1935		9 years, Jan. 1, 1923, to Dec. 31, 1931	
	Amount (b)	Per- cent ¹ (c)	Amount (d)	Per- cent ¹ (e)	Amount (f)	Per- cent ¹ (g)
A. Requirements:						
1. Net additions to tele- phone plant.....	\$3,521,900,345	74.72	\$2,516,868,875	77.55	\$2,531,806,591	82.72
2. Investment in affili- ated and other com- panies.....	185,260,034	3.93	112,028,591	3.45	116,760,038	3.82
3. Accounts and bills re- ceivable.....	106,203,206	2.25	69,835,883	2.15	69,835,883	2.28
4. Materials and supplies.....	33,996,111	.72	27,359,686	.84	655,937	.02
5. Obligations maturing or to be retired ²	836,799,549	17.75	505,003,111	15.56	362,931,62	11.86
6. Refunds under em- ployees' stock plans.....	67,437,045	1.43	67,437,045	2.08	-----	-----
7. Other assets.....	³ 37,958,224	³ .80	³ 53,101,493	³ 1.63	³ 21,425,297	³ .70
8. Total.....	4,713,638,066	100.00	3,245,431,698	100.00	3,060,564,786	100.00
B. Resources:						
1. Undivided profits.....	371,039,332	7.87	229,073,271	7.06	417,319,041	13.63
2. Surplus adjustments.....	³ 44,841,290	³ .95	³ 8,683,412	³ .27	11,520,094	.38
3. Depreciation reserve.....	967,880,093	20.53	666,249,413	20.53	393,288,550	12.85
4. Current and accrued liabilities.....	152,324,531	3.23	83,635,150	2.58	110,764,363	3.62
5. Capital obligations as- sumed.....	65,065,770	1.38	24,168,788	.74	22,591,288	.74
6. Other resources and adjustments.....	11,095,344	.24	³ 16,708,758	³ .51	³ 22,700,548	³ .74
7. Total.....	1,522,563,780	32.30	977,734,452	30.13	932,782,788	30.48
C. Net financial requirements (A8-B7).....	3,191,074,286	67.70	2,267,697,246	69.87	2,127,781,998	69.52
D. Financing by associated com- panies:						
1. Stock sold to public....	202,055,214	6.33	129,216,216	5.70	129,216,116	6.07
2. Bonds sold to public....	554,175,238	17.37	340,090,000	15.00	250,645,000	11.78
3. Notes sold to pension- fund trustee.....	114,415,925	3.59	114,415,925	5.05	85,801,069	4.03
4. Miscellaneous.....	35,556,187	1.11	2,141,881	.09	2,141,881	.10
5. Total.....	906,202,564	28.40	585,864,022	25.84	467,804,066	21.98
E. Financing by American Co.:						
1. Stock sales ⁴	1,328,090,009	41.62	1,046,742,062	46.16	1,046,742,062	49.19
2. Bond sales.....	887,734,555	27.82	576,209,930	25.41	576,209,930	27.08
3. Premiums on stock from bond con- versions ⁵	175,821,854	5.51	166,745,511	7.35	166,745,511	7.84
4. Notes sold to pension- fund trustee.....	11,022,113	.34	11,022,113	.48	13,122,615	.62
5. Miscellaneous ⁶	112,726,000	3.53	-----	-----	-----	-----
6. Total.....	2,515,394,531	78.82	1,800,719,616	79.40	1,802,820,118	84.73
F. Total financing (D5 plus E6).....	3,421,597,095	107.22	2,386,583,638	105.24	2,270,624,184	106.71
G. Excess of financing over net requirements represented by increase in cash and temporary investments (F-C).....	230,522,809	7.22	118,886,392	5.24	142,842,186	6.71

¹ Items B and C are percentages of item A, and items D to G, inclusive, are percentages of item C.² Does not include principal amount of convertible bonds retired by conversion into capital stock.³ Denote red figures.⁴ Does not include stock issued in exchange for convertible bonds or any premiums realized on such issues.⁵ Represents cash premiums from bond conversions only, where bond principal was accepted in full payment for stock the amounts are included in item E-2 only.⁶ Consists of \$99,026,000 notes of associated companies endorsed and sold to other associated companies, and \$13,700,000 of bills payable sold. See exhibit 1356, p. 68.

Source: Exhibit 1356, table 11, p. 46; exhibit 1360-B, schedules 27 to 29C, inclusive; and exhibit 2006-A, schedule 4. The basic underlying source is data compiled by American Telephone & Telegraph Co.

Associated companies.—The major part of the financial requirements of the Bell System as a whole was occasioned, of course, by the expansion of the local telephone business. This is clearly indicated by the fact that of the total requirements of the Bell System of \$3,061,000,000 during the 9-year period 1923 to 1931, inclusive, \$2,548,000,000 was for the requirements of associated companies; and of the total net additions to plant of \$2,532,000,000 for the system as a whole during this 9-year period, \$2,214,000,000 was accounted for by net additions to plant and general equipment of associated companies.¹⁰

How did the associated companies, as distinct from the Bell Telephone System as a whole, finance their requirements? Of the total requirements of \$2,548,000,000, the internal resources of the associated companies supplied \$594,000,000, or 23.3 percent. Notes sold to the pension-fund trustee supplied an additional amount of \$86,000,000, which, if added to the other internal sources of funds, would make the associated companies self-sufficient to the amount of \$680,000,000, or almost 27 percent of the total financial requirements, and nearly 31 percent of the additions to plant during the years 1923 through 1931. Among these internal resources, there was accretion of fixed capital reserves in the amount of \$359,000,000, or 14 percent of total requirements, and undivided profits after surplus adjustments of \$160,000,000, or 6.32 percent of the total requirements. These two internal sources supplied funds equal to nearly 24 percent of the net plant additions. The remainder of the financial requirements, some \$1,955,000,000—or, if we deduct notes sold to the pension-fund trustees, \$1,869,000,000—was supplied principally by sales of common and preferred stock to the American Co., which brought in \$1,280,000,000, and net advances from that company of \$215,000,000. In other words, \$1,495,000,000 came from the American Co. Common and preferred stocks and bonds sold to the public provided only \$380,000,000. Thus, only about 19.5 percent of the total net requirements was met by the sale of associated-company securities to the public.¹¹ At the same time, it is noteworthy that the financial assistance rendered by the American Co. ultimately took the form of acquisition of stock in the associated companies.

TABLE 63.—*Summary of financial requirements, resources, and financing of associated Bell Telephone companies in United States, and percentage distribution, Jan. 1, 1923, to Dec. 31, 1935*

Particulars (a)	13 years, Jan. 1, 1923, to Dec. 31, 1935		9 years, Jan. 1, 1923, to Dec. 31, 1931	
	Amount (b)	Per- cent ¹ (c)	Amount (d)	Per- cent ¹ (e)
A. Requirements:				
1. Net additions (plant and general equipment).....	\$2, 214, 104, 201	82. 82	\$2, 213, 883, 337	86. 87
2. Investment securities and advances.....	11, 165, 488	1. 42	2, 551, 491	1. 10
3. Accounts and bills receivable.....	34, 198, 902	1. 28	50, 197, 778	1. 97
4. Materials and supplies.....	20, 995, 720	. 79	3, 293, 107	1. 13
5. Other assets.....	16, 398, 442	. 61	14, 908, 725	. 59
6. Obligations maturing or retired.....	398, 727, 753	14. 92	275, 253, 153	10. 80
7. Total requirements.....	2, 673, 259, 530	100. 00	2, 548, 398, 395	100. 00

¹ Items B and C are percentages of item A, and items D and E are percentages of item C.

² Denote red figures.

¹⁰ Compare table 62, p. 425, and table 63, p. 426.

¹¹ These facts are presented in table 63, p. 426.

TABLE 63.—Summary of financial requirements, resources, and financing of associated Bell Telephone companies in United States, and percentage distribution, Jan. 1, 1923, to Dec. 31, 1935—Continued

Particulars (a)	13 years, Jan. 1, 1923, to Dec. 31, 1935		9 years, Jan. 1, 1923, to Dec. 31, 1931	
	Amount (b)	Per- cent ¹ (c)	Amount (d)	Per- cent ¹ (e)
B. Resources:				
1. Undivided profits.....	\$124,964,769	4.68	\$172,293,431	6.76
2. Surplus adjustments.....	35,275,230	1.32	11,163,892	.44
3. Accounts payable and bills payable.....	45,248,513	1.70	56,127,059	2.20
4. Accrued liabilities not due.....	29,977,848	1.12	35,465,223	1.39
5. Deferred credit items.....	9,809,035	.37	10,714,684	.42
6. Fixed capital reserves.....	601,279,404	22.49	359,255,686	14.10
7. Capital obligations assumed.....	24,168,788	.90	22,591,288	.89
8. Adjustments for premium and discount on securities sold included in above requirements and resources.....	30,425,857	1.14	29,980,857	1.18
9. Total resources.....	750,129,200	28.06	593,873,254	23.30
C. Net financial requirements.....	1,923,130,330	71.94	1,954,525,141	76.70
D. Financing by associated companies:				
1. Common stock sold to American Telephone & Telegraph Co.:				
(a) In liquidation of advances.....	1,144,218,882	59.50	1,072,218,882	54.86
(b) Other.....	189,562,747	9.86	189,562,747	9.70
2. Common stock sold to others.....	84,619,915	4.40	84,619,815	4.33
3. Preferred stock sold to American Telephone & Telegraph Co. in liquidation of advances.....	18,649,662	.97	18,649,662	.96
4. Preferred stock sold to public.....	44,596,301	2.32	44,596,301	2.28
5. Bonds sold to public.....	340,090,000	17.68	250,645,000	12.82
6. Notes sold to pension-fund trustee.....	114,415,925	5.95	85,801,069	4.39
7. Advances from American Telephone & Telegraph Co. (net).....	15,108,186	.78	214,505,707	10.97
8. Miscellaneous notes.....	2,141,881	.11	2,141,881	.11
9. Total.....	1,953,403,499	101.57	1,962,741,064	100.42
E. Excess of financing over net requirements, represented by increase in cash and temporary investments (D9-C).....	30,273,169	1.57	8,215,923	.42

¹ Denote red figures.

Source: Exhibit 1359, tables 15 and 19, pp. 52 and 67, and schedules 2 and 4; and exhibit 2096-A, schedule 4. The basic underlying source is data compiled by American Telephone & Telegraph Co.

Since acquisition of common-stock investments in the associated companies is the principal method of financing of subsidiaries employed by the American Co., it will be of interest to consider in somewhat greater detail the method of acquisition of this investment. Ordinarily, the initial step in the increase of equity ownership in associated companies has been to advance funds on notes or open accounts, which later have been converted mainly into stock of those debtor subsidiaries. During the years 1923 to 1935 the average amount of advances varied from a low of \$127,000,000 in 1923, to a high of \$317,000,000 in 1932,¹² and the total for the period was \$2,062,000,000.¹³ The total amount of such advances during the years 1923 to 1931 inclusive, was \$1,700,000,000.¹³ Of this last amount, \$1,072,000,000 was converted into common stock of associated companies in liquidation of the advances. This method of acquiring common-stock investments in the associated companies accounted for nearly 85 percent of the total acquisitions of common stock in such companies during

¹² See table 64, below.

¹³ See exhibit 1359, table 6, p. 25.

the period 1923-31 by the American Co.¹⁴ It is, therefore, clearly established that the advances to associated companies are usually temporary in nature and constitute a preliminary step to conversion into equity securities which the American Co. desires to take.

The interest rate on American Co. advances to associated companies has been 6 percent per annum gross, or 5.88 percent net; that is, a 2-percent discount, if the interest charges on the advances were paid monthly by the associated companies. The rate was reduced to 5 percent, or 4.9 percent net on the same basis, in October 1936, while investigators of the Federal Communications Commission were gathering data from the files of American Co. for use in a report in which the subject of interest charged associated companies was considered.¹⁵

TABLE 64.—Average advances by American Telephone & Telegraph Co. to associated telephone companies and interest thereon, years ended Dec. 31, 1923, to 1935, inclusive

Year (a)	Average advances outstanding (b)	Interest on advances (c)	Year (a)	Average advances outstanding (b)	Interest on advances (c)
1923.....	\$126, 973, 323	\$7, 605, 608	1931.....	\$245, 406, 541	\$14, 430, 081
1924.....	173, 327, 408	10, 298, 168	1932.....	317, 423, 367	18, 064, 494
1925.....	233, 809, 904	13, 828, 513	1933.....	265, 085, 051	15, 887, 001
1926.....	172, 426, 241	10, 138, 663	1934.....	179, 779, 456	10, 571, 082
1927.....	197, 159, 880	11, 593, 001	1935.....	131, 655, 204	7, 741, 326
1928.....	177, 331, 394	10, 427, 086	Totals:		
1929.....	241, 493, 061	14, 199, 792	1923-31.....	1, 840, 247, 775	108, 533, 153
1930.....	272, 317, 023	16, 012, 241	1923-35.....	2, 734, 190, 853	161, 097, 008

NOTE.—Average advances based upon capitalized interest.
Source: Exhibit 1350, table 64, p. 178.

Financing of American Telephone & Telegraph Co.¹⁶

During the 9 years from January 1, 1923, to December 31, 1931, the American Telephone & Telegraph Co. increased its net investment in associated companies by \$1,468,000,000. The net acquisitions were distributed among different kinds of investments, principally common stock and advances, as shown below:

Common stock.....	¹ \$1, 273, 809, 384
Preferred stock.....	704, 122
Bonds.....	² 19, 681, 126
Advances.....	212, 780, 205
Total.....	1, 467, 612, 585

¹ Of this amount \$1,261,781,629 was acquired directly from associated companies, \$1,072,218,882 being in liquidation of advances. See table 63.

² Decrease.

¹⁴ See table 63, item D1 (a), and table 65, item B1.

¹⁵ The report referred to is exhibit 1350.

¹⁶ The discussion under this heading is based on table 65, p. 429.

TABLE 65.—Comparison of acquisitions of securities of associated telephone companies with financing by American Co., Jan. 1, 1923, to Dec. 31, 1935

Particulars (a)	13 years, Jan. 1, 1923, to Dec. 31, 1935 (b)	9 years, Jan. 1, 1923, to Dec. 31, 1931 (c)
I. SECURITIES OF ASSOCIATED TELEPHONE COMPANIES		
A. Amount owned beginning of period:		
1. Common stock.....	\$604,836,146	\$604,836,146
2. Preferred stock.....	57,693,213	57,693,213
3. Bonds.....	20,517,170	20,517,170
4. Advances.....	102,961,238	102,961,238
5. Total.....	786,007,767	786,007,767
B. Net acquisitions during period:		
1. Common stock ¹	1,349,638,023	1,273,809,384
2. Preferred stock.....	750,190	704,122
3. Bonds.....	² 20,517,170	² 19,681,126
4. Advances ¹	13,382,085	212,780,205
5. Total.....	1,343,253,728	1,467,612,585
C. Amount owned at end of period:		
1. Common stock ¹	1,954,474,169	1,878,645,530
2. Preferred stock ¹	58,443,403	58,397,335
3. Bonds.....		836,044
4. Advances.....	116,343,923	315,741,443
5. Total.....	2,129,261,495	2,253,620,352
II. FINANCING BY AMERICAN CO.		
A. Net financing during period:		
1. Capital stock.....	1,146,050,528	1,213,487,573
2. Bonds.....	423,052,242	437,987,657
3. Advances from associated telephone companies.....	³ 7,807,324	414,861
4. Pension notes.....	11,022,112	13,122,615
5. Total.....	1,572,317,558	1,665,012,706
B. Excess of net financing by American Co. over net acquisitions of securities of associated telephone companies.....	229,063,830	197,400,121

¹ Includes \$586,486 of notes of Indiana Bell Telephone Co. which were waived by American Co., but which amount was charged to common-stock acquisitions.

² Denotes decrease.

³ Item C-1, balances at Dec. 31, 1931 and 1935, are \$4,671,781 less than recorded book cost by reason of net revaluations and adjustments not reflected in item B-1.

⁴ Item C-2, balances at Dec. 31, 1931 and 1935, are \$2,444,224 more than recorded book cost by reason of net revaluations and adjustments not reflected in item B-2.

Sources: Exhibit 1359, tables 22 and 24, pp. 72 and 74, after minor revisions in items B-1 and D-1 in table 22.

In order to be able to make these investments in the associated companies, the American Co., of course, did a considerable amount of financing through issuance of its own securities, mainly common stock, the proceeds from which were as follows:

Capital stock.....	\$1,213,487,573
Bonds sold, less bonds retired.....	437,987,657
Advances from associated telephone companies (net).....	414,861
Pension notes.....	13,122,615
Total.....	1,665,012,706

The proceeds from the sale of American Co. securities shown in the above tabulation exceeded the cost of acquiring the additional interests in the associated companies over the same period by \$197,000,000. This amount was available for other purposes of the American Co., including expansion of long lines facilities and increased investment in the Western Electric Co. It will be seen that about 73 percent of the

funds raised was represented by proceeds from the sale of common stock of the American Co., excluding the principal amount of convertible bonds retired through conversion into capital stock; 26 percent from the sale of bonds, after deducting the cash requirements for bonds retired; and about 1 percent from other sources, principally notes sold to the pension-fund trustee.

The figures above summarized give only the net financing. The actual gross financing during the period 1923 to 1931, inclusive, was \$2,002,000,000, but \$337,000,000 of this amount was required for reductions in obligations, such as retirement of bonds, reduction of loans from associated companies, and repayment of loans from banks. Consequently, the net financing during the period amounted to \$1,665,000,000.¹⁷

Thus, the Bell System was financed during the 9 years 1923 to 1931, inclusive, principally by the issuance of American Co. stock from which the proceeds were \$1,213,000,000, of American Co. bonds which produced \$438,000,000, and of associated company securities in much smaller amounts. In the next two sections, the conditions under which bonds and stocks have been issued are discussed in greater detail.

SECTION 3. BOND ISSUES

Although the American Telephone & Telegraph Co. and its predecessor, the American Bell Telephone Co., have depended primarily upon capital stock as a source of funds, not only for their own purposes but also and mainly for the requirements of their subsidiaries, bond and note issues were used extensively for this purpose during certain periods of their history. Associated companies also have used this medium of financing as shown in the preceding section. This method of financing has been employed to a relatively greater extent than stock financing during periods of disturbed economic conditions when it was difficult to sell new stock issues to stockholders at par.

Types of Parent Company Obligations Issued.

The various types of long-term debt issues sold or assumed by the parent companies of the Bell System during the years 1880 to 1935, inclusive, and the amounts of each type, excluding notes sold to the trustee of the pension fund, are summarized below:

Type	Principal amount	Percent of total
American Bell:		
Convertible notes.....	\$1, 145, 000	36.4
Debenture bonds.....	2, 000, 000	63.6
Total.....	3, 145, 000	100.0
American Co.:		
Collateral trust bonds ¹	178, 000, 000	14.4
Convertible bonds.....	486, 112, 700	39.4
Debenture bonds.....	375, 000, 000	30.4
Note issues and contract obligations.....	195, 500, 000	15.8
Total.....	1, 234, 612, 700	100.0

¹ Includes \$10,000,000 of 4-percent debenture bonds which were issued by American Bell, assumed in 1899 by American Co., and secured by including them under the collateral trust 4-percent bond trust indenture.

Source: Exhibit 1390-A, p. 323.

¹⁷ See exhibit 1359, table 22, p. 72.

The first long-term debt of American Bell Telephone Co. was in the form of convertible notes. Later, and of course prior to 1900, it financed in larger amount through sale of debenture bonds. American Telephone & Telegraph Co. relied largely upon collateral trust bonds and 2- to 5-year notes between 1900 and 1925, although during this same period it sold large amounts of convertible bonds, but they were generally quite promptly exchanged for common stock. Beginning in 1923 American Co. began to sell debenture bonds and since that time they have tended to replace collateral trust bonds in its long-term debt. The amounts of the different types of long-term debt outstanding as of certain dates during the period 1881 through 1935, excluding notes sold to the trustee of the pension fund, are shown in the following tabulation:

Date	Total long-term debt outstanding	Collateral trust bonds	Debenture bonds	Convertible notes and bonds ¹	Other notes and long-term debt
As of Feb. 28, 1881.....	\$296, 100			\$296, 100	
As of Dec. 31—					
1884.....	3, 600			3, 600	
1887.....					
1890.....	2, 000, 000		\$2, 000, 000		
1893.....	2, 000, 000		2, 000, 000		
1896.....	2, 000, 000		2, 000, 000		
1899.....	10, 000, 000		10, 000, 000		
1902.....	38, 000, 000	\$38, 000, 000			
1905.....	78, 000, 000	58, 000, 000			\$20, 000, 000
1908.....	210, 761, 000	53, 000, 000		135, 992, 000	21, 769, 000
1911.....	104, 459, 000	78, 000, 000		20, 459, 000	6, 000, 000
1914.....	159, 505, 000	88, 000, 000		71, 505, 000	
1917.....	190, 753, 300	167, 180, 500		16, 003, 800	7, 569, 000
1920.....	317, 429, 000	164, 446, 100		62, 982, 900	90, 000, 000
1923.....	309, 825, 500	161, 949, 500	100, 000, 000	17, 407, 600	30, 468, 400
1926.....	385, 190, 400	159, 634, 900	221, 967, 100	4, 488, 400	
1929.....	521, 445, 700	79, 371, 000	218, 634, 100	223, 440, 600	
1932.....	447, 335, 400	66, 690, 000	365, 133, 400	15, 512, 000	
1935.....	443, 532, 600	64, 865, 200	363, 155, 400	15, 512, 000	

¹ The amounts shown in this column for 1908 and subsequent years represent convertible bonds.

Source: Exhibit 1360-A, p. 325.

The greatest permanent increase in long-term debt came during the period of the World War when this source of financing was resorted to in greater measure than had been the rule theretofore or has been since.

Marketing of Parent Company Bonds and Notes.

Bankers have had a definite part in marketing the bond and note issues of the parent company of the system since 1898, with the exception of the convertible bonds issued in 1929 and due in 1939. The financial contacts of the American Bell Telephone Co. prior to 1900 were with Boston institutions. For a long number of years the American Bell Telephone Co. attempted, with some success, to be independent of outside financial aid by reinvestment of earnings and by the issue of common stock, convertible notes, and debentures, to its own stockholders.¹⁸

Prior to 1898, \$1,145,000 of convertible notes and \$2,000,000 of debentures were sold to stockholders in order to finance the expansion of telephone service, the acquisition of an interest in the telephone-manufacturing industry, and the extension of long-distance business. In 1898 an issue of \$5,000,000 of 10-year debenture 4-percent coupon

¹⁸ See exhibit 2096-F, pp. 32-33, and 54-55.

bonds were awarded to Lee, Higginson & Co., of Boston, under competitive bidding. In the following year, 1899, again under competitive conditions, an additional issue of \$3,000,000 of the same bonds was sold to R. L. Day & Co. Six months later, an additional amount of \$2,000,000 of the same bonds was sold under conditions of competitive bidding to Estabrook & Co., R. L. Day & Co., and Vermilye & Co. All these bonds were sold to the bankers above par under competitive conditions. The bid price of Lee, Higginson & Co. for the \$5,000,000 issue in 1898, for instance, was \$100.771, and the price to the public was \$102, plus interest.¹⁹

In 1899 the American Telephone & Telegraph Co., by resolution of its stockholders, authorized the issuance of collateral trust 4-percent bonds, due in 1929. These were sold from time to time, between 1900 and 1911, to Kidder, Peabody & Co., except for some of the later issues in which Baring Bros. & Co., Ltd., of London, also participated. In the period 1900-02, \$28,000,000 of these bonds were sold to Kidder, Peabody & Co. without competitive bidding. The first \$15,000,000 was sold for cash during 1900-01, and \$13,000,000 sold during 1902 was in exchange for securities pursuant to an agreement looking toward the acquisition of control of Erie Telephone & Telegraph Co. and its subsidiaries. An additional amount of \$25,000,000 of this same bond issue was offered in 1905 under competitive bidding, and was awarded to Kidder, Peabody & Co. and Baring Bros. & Co., Ltd. The rest of the issue, some \$25,000,000, was sold in 1910-11 to Kidder, Peabody & Co. without competitive bidding. This change of policy in 1906 is explainable, in part at least, by the increasing influence in the affairs of the American Telephone & Telegraph Co. of financial interests representing J. P. Morgan & Co., Kuhn, Loeb & Co., and Kidder, Peabody & Co.²⁰ Before this change of policy, \$20,000,000 of 3-year 5-percent gold coupon notes were sold in 1904 under competitive bidding to Lee, Higginson & Co. and Speyer & Co. This, and the issue of 1905 just mentioned, to Kidder, Peabody & Co., were the last of the competitive offers of American Telephone & Telegraph Co. bonds. All of the bonds and notes mentioned in this paragraph were sold at varying discounts. The \$13,000,000 bonds issued in 1902 in exchange for securities were actually recorded as issued at par by arbitrarily assigning a sufficiently large value to the securities received in exchange.²¹

The sale of \$150,000,000 of convertible bonds in 1906 was preceded by a whole year of negotiations between President F. P. Fish, of the American Co., and John I. Waterbury, a director, who was also president of the Manhattan Trust Co. at the time and who represented the J. P. Morgan interests. Early in 1905 New York bankers had submitted a plan of financing involving the issue of \$150,000,000 of bonds, of which all but \$15,000,000 were to have been convertible. A report stressing the inadvisability of such a plan was made by three of the principal officials of the company to President Fish. Among other objectionable features of the plan, the report pointed out that the bankers might retain the bonds until convertible and thereby secure a large block of stock which would enable them to gain control of the company. In February 1905 President Fish

¹⁹ See exhibit 1360-A, pp. 338-340.

²⁰ See ch. 4, sec. 1, *supra*.

²¹ See exhibit 1360-A, pp. 340-342, and exhibit 2096-F, pp. 115-119 and 129-130.

notified J. P. Morgan & Co. that there were "so many practical and technical difficulties in the scheme suggested in our conference last Friday that it will be some time before we shall be in a position to take the matter up on its merits. Absolutely no time will be lost in making such investigations as are necessary to a proper consideration of the plan." United States Senator W. M. Crane, of Massachusetts, then a director of the company, went on record in February 1905 as opposing the plan, and suggested that the necessary money be raised by the sale of 4-percent collateral bonds, without the conversion clause, and that different parties be permitted to make proposals for them. This suggestion was accepted, and \$25,000,000 of such bonds were sold to Kidder, Peabody & Co., and Baring Bros. & Co., Ltd. However, the proceeds from this sale were only sufficient for temporary needs, and the company officials continued to consider the advisability of an issue of convertible bonds.²²

The significant features of the first plan considered in 1905 were embodied in the 1906 convertible bond issue, despite the opposition previously mentioned. The contract between the American Co. and J. P. Morgan & Co., Kidder, Peabody & Co., Kuhn, Loeb & Co., and Baring Bros. & Co., Ltd., was dated February 8, 1906,²³ and provided for the sale of \$100,000,000 of convertible 4-percent gold bonds during 1906, 1907, and 1908, with an option on \$50,000,000 more. The bonds were convertible at \$140 after March 1, 1909.

After the bankers had paid for \$30,000,000 of the bonds in accordance with the contract, the original contract was modified in January 1907 when the company granted an additional discount of 3 percent on the entire purchase, and the bankers agreed to make an immediate public offering. A further concession was made by reducing the option price to 87½ for the last \$50,000,000 of bonds. President Fish, in reply to an inquiry from a stockholder, stated that market conditions at this time were such that the bankers were unable to offer the bonds to the public with any chance of success. The syndicate was dissolved June 1, 1908. The Commercial and Financial Chronicle of June 6, 1908, stated that the Boston News Bureau reported that only a trifle over \$10,000,000 of the issue had been sold to investors, nearly \$90,000,000 remaining in the hands of the underwriters. This would indicate that the bankers who were originally members of the syndicate probably held the majority of the bonds until the conversion date, March 1, 1909.

By a later agreement, the bankers refrained from exercising their option on the additional \$50,000,000 face amount of bonds prior to its termination on October 1, 1908, having obtained an extension of their option to February 1, 1909. This modified option was exercised in November 1908 with the understanding that payment for the bonds would be made on or before March 1, 1909.

An offer of stock to stockholders in June 1907 which had been suggested during negotiations resulting in the modified contract in January of that year reduced the conversion price of the bonds from \$140 to about \$133.73. If the bankers did hold approximately \$90,000,000 of the first lot of bonds and, later, the \$50,000,000 purchased under the option, they would have benefited from the lower

²² See exhibit 1360-A, pp. 342-346; exhibit 2096-A, pp. 52-63; and exhibit 2096-F, pp. 124-126. See also discussion in ch. 4, sec. 1, *supra*.

²³ For copy of this contract see exhibit 2096-A, appendix 10.

conversion price to the extent of 45,000 to 50,000 additional shares of American Co. stock.

During the 9-year conversion period from 1909 to 1918, all but \$2,589,000 of the bonds were converted into 1,107,519 shares of capital stock at an average price of \$132.67 per share.²⁴

There was a change in the management of American Co. in 1907 which appears to be traceable, at least in part, to the influence of the banking syndicate that had control of these convertible bonds.²⁵ After this change, all new bond issues by the American Co., with one exception, were sold under noncompetitive conditions to syndicates headed by J. P. Morgan & Co., and, since 1935, to Morgan, Stanley & Co., Inc., and their associates, as shown in table 66, page 435. From 1907 to 1936, inclusive, a total of \$900,000,000 of nonconvertible bonds, debentures, and notes was sold to the Morgan firms and their associates, which resulted in total underwriters' fees of \$23,250,000 on the \$835,000,000 for which the information was available. The bankers' gross spread has varied from \$2 to \$3.75 per \$100 unit. The \$2 spread applied to some \$290,000,000 of 3½-percent debentures issued in 1936 as a part of refunding operations. The spread of \$3.75 was allowed on an issue of \$100,000,000 of 5½-percent sinking-fund gold debenture bonds in 1923.

It is not possible to pass judgment as to the equitableness of either the price of bonds or bankers' commissions in retrospect, in view of the fact that there were no competitive bids and there is no way of re-creating today the conditions under which these bonds have been sold since 1907. It is a fact, however, that no opportunity was given to others to bid on those bonds, and all attempts by Lee, Higginson & Co., Speyer & Co., and other banking firms to be given an opportunity to bid for bonds were rebuffed by the company's management in 1905 and 1906 at the time of the large issue of convertible bonds to J. P. Morgan & Co. Since that time, it seems to have been taken for granted that financing through bond issues is a bilateral arrangement between the American Co. and J. P. Morgan & Co. It is J. P. Morgan & Co. that chooses its associates as well as the underwriters who are to participate in the bond issues. Members of the investigation staff were unable to obtain from the company sufficient data and studies in connection with the issuance of bonds for determining the bases used for the establishment of the prices at which bonds were sold to J. P. Morgan and associates. In connection with a request for such information on the \$150,000,000 face amount of 35-year 5-percent debentures sold in 1930, W. S. Gifford, president, advised C. A. Heiss, comptroller of the American Co., as relayed by the latter to the Commission, that—

* * * he knows of no data, memoranda, records of conferences, or conversations or correspondence involved in that determination other than those which have already been made available to you. He also asks me to state that, to the best of his recollection, all conversations with the underwriters preliminary to the sale of these bonds were carried on between himself, on behalf of the company, and Mr. George Whitney, of J. P. Morgan & Co., for the underwriters.

²⁴ The details of the issuance of these 30-year convertible 4-percent gold bonds are presented in table 67, p. 437.

²⁵ See ch. 4, sec. 1, *supra*.

TABLE 66.—*Nonconvertible bonds, coupon and gold notes issued by American Telephone & Telegraph Co., years 1904 to 1936, inclusive*

Item	Particulars (a)	Year issued (b)	Principal amount issued (c)	Selling price to bankers (d)	Gross pro- ceeds (e)	Offering price to public (f)	Banker's gross commissions ¹	
							Spread per \$100 unit (g)	Total amount (h)
1	Sold to Speyer & Co. and Lee, Higginson & Co.: 3-year 5-percent gold coupon notes, due 1907.....	1904	\$20,000,000	\$97.77	\$19,554,000	(²)	-----	-----
2	Sold to Kidder, Pea- body & Co., and asso- ciates: Collateral trust 4- percent bonds, due 1929 ³	1905 1906 1910 1911	20,000,000 5,000,000 7,700,000 17,300,000	94.19 94.19 85.00 85.00	18,838,000 4,709,500 6,545,000 14,706,000	\$96.50 96.50 90.25 90.25	\$2.31 2.31 5.25 5.25	\$462,000 115,500 404,250 908,250
	Total.....		50,000,000	-----	44,797,500	-----	-----	1,890,000
3	Sold to J. P. Morgan & Co., and associates: 5-percent 3-year gold notes, due 1910.....	1907	25,000,000	91.00	22,750,000	(²)	-----	-----
4	30-year 5-percent collateral-trust gold bonds, due 1946.....	1916	80,000,000	94.50	75,600,000	98.00	3.50	2,800,000
5	4½-percent coupon notes, due 1918.....	1916	40,000,000	98.00	39,200,000	(²)	-----	-----
6	5-year 6-percent gold notes, due 1924.....	1919	⁴ 40,000,000	97.00	38,800,000	99.25	2.25	900,000
7	3-year 6-percent gold notes, due 1922.....	1919	50,000,000	97.00	48,500,000	99.25	2.25	1,125,000
8	20-year sinking fund 5½-percent gold debenture bonds, due 1943.....	1923	100,000,000	94.75	94,750,000	98.50	3.75	3,750,000
9	35-year sinking fund 5-percent gold de- bentures, due 1960.....	1925	125,000,000	91.50	114,375,000	95.00	3.50	4,375,000
10	35-year 5-percent gold debentures, due 1965.....	1930	150,000,000	96.50	144,750,000	99.50	3.00	4,500,000
	Total.....		610,000,000	-----	578,725,000	-----	-----	17,450,000
11	Sold to Morgan, Stan- ley & Co., Inc., and associates: 25-year, 3¼-percent debentures of 1961.....	1936	⁶ 150,000,000	99.00	148,500,000	101.00	2.00	3,000,000
12	30-year 3¼ percent debentures of 1966.....	1936	⁷ 140,000,000	100.00	140,000,000	102.00	2.00	2,800,000
	Total.....		290,000,000	-----	288,500,000	-----	-----	5,800,000
13	Total.....		970,000,000	-----	931,576,500	-----	-----	25,140,000

¹ Based on assumption that all bonds were sold by the bankers at the offering price to the public.² Data not available.³ Prior to 1904, \$28,000,000 principal amount of this issue was disposed of to Kidder, Peabody & Co., \$10,000,000 in 1900 at \$95.45, \$5,000,000 in 1901 at \$95, and \$13,000,000 in 1902, which was recorded as issued at par in exchange for \$12,000,100 par value of preferred stock and \$8,000,100 par value of common stock of Western Telephone & Telegraph Co.⁴ Complete information not available, and 90.25 represents offering price to public of \$10,000,000 of the \$17,300,000 issued in 1911.⁵ These notes, together with \$25,000,000 principal amount of debentures of New York Telephone Co., purchased from that company at 98, were sold to the bankers at 97 for both issues combined.⁶ Does not include \$25,000,000 withheld by company and sold to trustee of pension fund at \$99.⁷ Does not include \$20,000,000 withheld by company and sold to trustee of pension fund at \$100.

Source: Exhibit 1360-B, schedule 29-B; exhibit 2096-A, schedule 3; and Report on Communication Companies, 73d Cong., 2d sess., H. Rept. 1273, pt. III, No. 2, pp. 1176-1177.

The conditions under which convertible bonds have been issued have been the same as those attendant upon the sale of regular bonds and debentures, with the exception of a large issue in 1929 which was offered to stockholders and was not underwritten by J. P. Morgan & Co. and associates. Other large issues of convertible bonds were offered in 1913 in the amount of \$67,000,000, and in 1918 in the amount of \$48,367,200. The 1913 issue was underwritten by the bankers, although the bonds were offered to stockholders on a pro rata basis. All but \$1,556,300 principal amount was taken by the stockholders at par. The remainder was taken by the underwriting syndicate. Underwriters' fees for this issue were \$1,340,000, a little less than the amount of the bonds they had to buy. The stockholders took only \$10,851,600 of the 1918 issue, at a price of 94. Underwriters took up the balance of \$37,509,800 at the same price. The underwriters' fees were \$1,451,016, or 3 percent on the total amount offered. It is not known at what price the bankers sold these convertible bonds.²⁶ On these two issues of convertible bonds totaling \$117,000,000, of which the underwriters had to take slightly over \$39,000,000 at a cost of only a little more than \$36,800,000, underwriters' fees were \$2,791,016, which did not include, of course, any profits or losses they may have made or incurred on the resale of the bonds they took. In 1929 convertible bonds in principal amount of \$218,009,900 were taken by the stockholders at par. These bonds were not underwritten by bankers. However, unsubscribed bonds in the amount of \$1,102,800 were sold to bankers and brokers at an average price of \$217.40.²⁷

From 1905 to 1936 the American Co. has sold \$950,000,000 of bonds, notes, and debentures, and \$486,112,700 of convertible bonds. Of course, all these bonds were not outstanding at the end of 1936. In fact, practically all of the convertible bonds have either been converted or retired. At the end of 1936, there was outstanding \$443,093,700 of funded debt, with an additional amount of \$138,960,090 principal and premium of bonds called for redemption but not yet presented for payment, which, of course, were in the nature of current liabilities, and were offset by an equal amount of cash available for payment thereof upon presentation.²⁸

²⁶ A small amount of these bonds which was not underwritten by the bankers or offered to stockholders, namely, \$1,632,800, was sold in 1924 by the American Co. to Bell Telephone Securities Co. and was then converted into capital stock by that company. The average price on these bonds was \$118.05.

According to H. Rept. 1273, 73d Cong., 2d sess., pt. III, No. 2, p. 1177, speaking of the 1918 issue: "An offering of these bonds was made to the public by Harris Forbes & Co. at 94 percent. The amount offered was not specified."

²⁷ See exhibit 1360-A, pp. 346-349.

²⁸ See Annual Report to Stockholders of American Co. for 1936, p. 25.

TABLE 67.—*Convertible bonds issued by American Telephone & Telegraph Co., years 1906 to 1936, inclusive*

Item	Particulars (a)	Year issued (b)	Principal amount (c)	Selling price (d)	Gross pro- ceeds (e)	Under- writers' fees (f)	Net pro- ceeds (g)
1	Sold to J. P. Morgan & Co. and associates: 30-year convertible 4-percent gold bonds, due 1936.....	1906 1907 1908 1908 1909	\$30,000,000 60,000,000 10,000,000 35,000,000 14,000,000	\$89.50 89.50 89.50 87.50 87.50	\$26,850,000 53,700,000 8,950,000 31,500,000 12,250,000	----- ----- ----- ----- -----	\$26,850,000 53,700,000 8,950,000 31,500,000 12,250,000
2	Total of issue.....		150,000,000	-----	133,250,000	-----	133,250,000
	Underwritten by J. P. Morgan & Co., and associates: Convertible 4½-percent gold bonds, due 1933:						
3	Sold to stockholders.....	1913	65,443,700	100.00	65,443,700	\$1,308,874	64,134,826
4	Sold to underwriters.....	1913	¹ 1,556,300	100.00	1,556,300	31,126	1,525,174
5	Total of issue.....		67,000,000	-----	67,000,000	1,340,000	65,660,000
6	7-year 6-percent convertible gold bonds: Sold to stockholders.....	1918-19	10,851,600	94.00	10,200,504	325,548	9,874,956
7	Sold to underwriters.....	1918	¹ 37,509,800	94.00	35,259,212	1,125,204	34,133,918
8	Unsubscribed bonds sold to Kidder, Peabody & Co.....	1919	5,800	102.155	5,925	174	5,751
9	Total underwritten by bankers.....		48,367,200	-----	45,465,641	1,451,016	44,014,625
10	Bonds not underwritten by bankers or offered to stockholders, sold to Bell Telephone Securities Co.....	1924	1,932,800	118.05	1,927,520	-----	1,927,520
11	Total of issue.....		50,000,000	-----	47,393,161	1,451,016	45,942,145
	Offered to stockholders without underwriting by bankers: 10-year convertible 4½-percent gold debenture bonds due 1939:						
12	Sold to stockholders.....	1929-30	218,009,900	100.00	218,009,900	-----	218,009,900
13	Unsubscribed bonds sold to bankers and brokers.....	1929-30	1,102,800	217.402	2,397,510	-----	2,397,510
14	Total of issue.....		219,112,700	-----	220,407,410	-----	220,407,410
15	Total convertible bonds issued.....		486,112,700	-----	468,050,571	2,791,016	465,259,555

¹ No data available on prices at which these bonds were offered to public by bankers, if any were so offered, except an offering of the 1918 issue by Harris, Forbes & Co. at 94 which did not specify the amount offered.

Source: Exhibit 1360-B, schedule 298.

Marketing of Associated Company Bonds.

Since the accession of J. P. Morgan & Co. as the dominant banking interests in the affairs of the Bell System in 1906-7, not only American Co. bond issues, but also associated company bond issues have been sold through syndicates organized by this firm. A tabulation of associated company bond issues from 1923 to 1936, inclusive, indicates that in this period, of the total amount of \$411,000,000 principal amount of bonds sold, all but \$10,000,000 were sold to either J. P. Morgan & Co. and associates or, since 1935, to Morgan, Stanley & Co., Inc., and associates. The exception was an issue of \$10,000,000 of debentures by the Southern New England Telephone Co., which is one of the two associated companies that are not controlled by the American Co. by ownership of a majority of common stock. The commission on the purchase and flotation of the remaining \$401,000,000 of bonds amounted to \$10,859,000. The spread per \$100 unit has varied from \$3.50 in 1924 to \$2 in 1935-36. These bonds also have been sold without any competitive bidding. No studies have been made to determine whether the prices at which the bonds were sold to the banking syndicate were the best available. The amounts, dates, the name of issuing company, the price, and the bankers' commission on these associated company bonds are given in table 68, below.

TABLE 68.—*Funded debt issued by associated Bell Telephone companies, years 1923 to 1936, inclusive*

Item	Particulars (a)	Year issued (b)	Principal amount issued (c)	Selling price to bankers (d)	Gross proceeds (e)	Offering price to public (f)	Bankers' gross commissions ¹	
							Spread per \$100 unit (g)	Amount (h)
1	Sold to J. P. Morgan & Co. and associates: The Bell Telephone Co. of Pennsylvania: First and refunding mortgage 5-percent bonds, Series B, due 1948.....	1923	\$35,000,000	\$95½	\$33,425,000	\$98½	\$3	\$1,050,000
2	Series C, due 1960.....	1925	50,000,000	97	48,500,000	100	3	1,500,000
3	Illinois Bell Telephone Co.: First-mortgage 5-percent bonds, series A, due 1956.....	1923	50,000,000	92	46,000,000	95¾	3¾	1,625,000
4	Southwestern Bell Telephone Co.: First and refunding mortgage 5-percent bonds, series A, due 1954.....	1924	50,000,000	90	45,000,000	93½	3½	1,750,000
5	New England Telephone & Telegraph Co.: First-mortgage 4½-percent bonds, series B, due 1961.....	1926	40,000,000	91½	36,600,000	94½	3	1,200,000

¹ Based on assumption that all bonds were sold by the underwriters at the offering price to the public.

TABLE 68.—*Funded debt issued by associated Bell Telephone companies, years 1923 to 1936, inclusive—Continued*

Item	Particulars (a)	Year issued (b)	Principal amount issued (c)	Selling price to bankers (d)	Gross proceeds (e)	Offering price to public (f)	Bankers' gross commissions ¹	
							Spread per \$100 unit (g)	Amount (h)
6	Sold to J. P. Morgan & Co. and associates—Continued. Southern Bell Telephone & Telegraph Co.: First-mortgage 5-percent bonds, due 1941.....	1929	\$32,000,000	\$97½	\$31,120,000	\$100	\$2¼	\$880,000
7	Total.....		257,000,000		240,645,000			8,005,000
8	Sold to Chas. W. Seranton & Co.: The Southern New England Telephone Co.: 40-year 5-percent debentures, due 1970.....	1930	10,000,000	100	10,000,000	² 102½	2½	250,000
9	Sold to Morgan, Stanley & Co., Inc., and associates: Illinois Bell Telephone Co.: First and refunding mortgage 3½-percent bonds, series B, due 1970.....	1935	³ 45,000,000	100½	45,225,000	102½	2	874,000
10	Southwestern Bell Telephone Co.: First and refunding mortgage 3½-percent bonds, series B, due 1964.....	1935	⁴ 44,000,000	100½	44,220,000	102½	2	880,000
11	The Pacific Telephone & Telegraph Co.: Refunding mortgage 3½-percent bonds: Series B, due 1966.....	1936	30,000,000	99½	29,850,000	101½	2	600,000
12	Series C, due 1966.....	1936	25,000,000	103	25,750,000	105	2	500,000
13	Total.....		144,000,000		145,045,000			2,854,000
14	Total.....		411,000,000		395,690,000			11,109,000

¹ Discount of ¼ of 1 percent to institutions disregarded in computations.² Includes \$1,300,000 principal amount which was not underwritten, but was sold to trustee of pension fund at 100½ plus accrued interest, and has been excluded in computing bankers' commissions.³ Excludes \$1,000,000 principal amount which was not underwritten, but was sold to trustee of pension funds of Bell System companies in 1936 at 100½ plus accrued interest.

Source: Exhibit 2096-A, schedule 4; and report on communication companies, H. Rept. 1273, pt. III, No. 2, 73d Cong., 2d sess., pp. 1321, 1474-5, 1603, 1990, 2046, and 2085.

SECTION 4. STOCK ISSUES

The policy of American Telephone & Telegraph Co. has been to acquire common stock in associated companies in conversion of advances previously made. The American Co. itself obtains the necessary funds for this purpose principally by the issue of its own common stock to the public. The common stock of the American Co. is issued under conditions that raise certain pertinent questions with regard to the problem of financing a public utility, the problems of cost of capital and the rate of return to be allowed on public-utility property. It is for these reasons that circumstances surrounding stock issues of the American Co. are discussed in some detail in this section.

Stock Issues of American Bell Telephone Co. Prior to 1900.

In chapter 1 it is shown that the American Bell Telephone Co. acquired the net assets of National Bell Telephone Co. in 1880 for \$5,100,000 par value of capital stock. In the following 20 years, the American Bell Telephone Co. issued \$20,786,300 par value of additional common stock. Of this amount, \$1,145,000 par value was issued in conversion of convertible notes, and the balance, \$19,641,300 par value, was sold for cash at a premium of \$6,816,559, or total proceeds of \$26,457,859. These sales of capital stock are summarized below:

Particulars	Par value	Premiums	Total proceeds
Under circular offers to stockholders:			
Sales at par.....	\$13,289,100		\$13,289,100
Sales at a premium.....	4,539,100	\$4,810,956	9,350,056
Total.....	17,828,200	4,810,956	22,639,156
Unsubscribed and unoffered shares sold, including proceeds from sales of rights.....	1,813,100	2,006,603	3,819,703
Total.....	19,641,300	6,816,559	26,457,859

Source: Exhibit 1360-A, pp. 301-305.

Over 90 percent of the capital-stock sales during these 20 years were made under circular offers to stockholders. From 1880 through 1893 the offers were made at par. In 1894, the Massachusetts Legislature, in authorizing an increase in the capital stock of the American Bell Telephone Co., required that the additional authorized stock should be offered to stockholders “* * * at the market value thereof at the time of increase, as shall be determined by the commissioner of corporations * * *.”²⁹ Consequently, in 1894, 1895, 1896, and 1897 over 45,000 shares of common stock were issued at an average price of more than \$200 per share. These sales were made under circular offers to stockholders. Previous to this requirement, when stock was being offered at par, usually stockholders subscribed to more than 99 percent of the offers. In 1894 less than 33 percent and in 1895 less than 42 percent of the stock offers were subscribed by the stockholders or their assignees. In 1896 and 1897 over 80 percent and 94 percent, respectively, of the stock offers were subscribed by the stockholders. Furthermore, practically all sales of unsubscribed stock to others have been made at premiums as indicated

²⁹ See ch. 1, p. 9, *supra*. See also exhibit 1360-A, p. 304, and exhibit 1260-C, appendix 8E.

in the above tabulation. The average price of such unsubscribed shares sold has been well over \$200 per share.

The policy of issuing shares at par, with their high earning power, as expressed by the \$15 and \$18 dividends per share that the American Bell was paying after 1883, and with the market prices much higher than par, gave the stockholders the opportunity of either purchasing additional shares at par, with the possible prospects of receiving the same high rate of dividends on these new shares, or of realizing substantial amounts of cash immediately by selling their rights to others. The stockholders who chose the latter alternative, however, sold a part of their proportionate equity in undistributed profits and in future profits of the company. This was a valuable right, which the management and the stockholders of the American Bell Telephone Co. were disinclined to forego. The requirement of the statute of Massachusetts that new stock must be issued at or near market price was one of the factors that entered into the decision of the company to change the control of the Bell System from the American Bell Telephone Co., which was a Massachusetts corporation, to the American Telephone & Telegraph Co., a New York corporation, where there were no such restrictions. This was done, as previously explained, as of December 30, 1899.

Stock Issues of the American Co. (1900-35).

The authorized capital stock of the American Co. was \$100,000,000 in 1900. This increased steadily until in 1931 the company obtained further authority to increase its outstanding stock to \$2,500,000,000. At the end of 1935 the authorized issue was still the same amount, and the par value of outstanding shares was \$1,866,227,500. Of this amount, \$51,772,600 par value was issued as of December 30, 1899, on a 2 for 1 basis, in exchange for the outstanding capital stock of American Bell Telephone Co.; \$1,135,092,000 par value was issued at par under circular offers to stockholders; and \$679,362,900 par value was issued at varying amounts of premiums, which totaled \$281,018,238. Thus, after the 2 for 1 exchange for American Bell stock, \$1,814,454,900 par value was issued during the years 1900 to 1935, inclusive, of which 62.56 percent was sold at par under circular offers to stockholders and 37.44 percent was issued at a premium of \$281,000,000.

A further analysis of stock issues by years, as indicated in table 69, page 442, shows that the largest amount of paid-in capital recorded for new issues of stock was in 1930, when there was an increase of \$663,107,581 in total paid-in capital. The year 1928 produced \$192,125,735 in paid-in capital; 1926, 1924, 1922, 1921, and 1909 were important years showing large increases in paid-in capital. The greatest average annual increase in paid-in capital came during the 9 years 1923 to 1931, inclusive, when there was an increase of \$1,383,186,351 in total paid-in capital, of which \$763,804,200 resulted from stock issued at par and the rest was obtained from the issuance of \$402,684,500 par value of stock, at a total premium of \$216,697,651.

The stock issued at par has been sold under circular offers to stockholders pursuant to the preemptive rights reserved to stockholders by the corporation laws of New York State, where the American Co. is incorporated. The premium has resulted from the issuance of shares in conversion of convertible bonds, from the sale of stock unsubscribed by the stockholders or their assignees under the cir-

cular offers which have been sold to others, from sale to employees under stock-purchase plans on installment subscriptions, and in exchange for securities of other companies. In order to obtain a clear view of the methods adopted by the company in financing its needs, it is necessary to consider these two classes of stock issues—those issued at par and those issued at a premium—separately.

TABLE 69.—*Summary of authorized and outstanding capital stock of American Telephone & Telegraph Co., 1900 to 1935, inclusive*

As of Dec. 31—	Par value authorized	Capital stock outstanding		Increase during year			
		Par value ¹	Premium ²	Total paid- in capital	Par value of stock issued at par	Stock issued at premium	
						Par value	Premium
(a)	(b)	(c)	(d)	(e)=(f+g+h)	(f)	(g)	(h)
1900.....	\$100,000,000	\$56,990,100	-----	³ \$5,217,500	³ \$5,217,500	-----	-----
1901.....	150,000,000	72,540,200	\$13,917	15,564,017	15,492,800	\$57,300	\$13,917
1902.....	150,000,000	87,836,100	2,705,541	17,987,524	10,198,900	5,097,000	2,691,624
1903.....	250,000,000	127,068,900	2,708,656	39,235,915	39,227,500	5,300	3,115
1904.....	250,000,000	131,551,400	2,709,649	4,483,493	4,479,300	3,200	993
1905-07.....	250,000,000	131,551,400	2,709,649	-----	-----	-----	-----
1908.....	250,000,000	158,476,600	3,471,812	27,687,363	20,973,800	5,951,400	762,163
1909.....	300,000,000	256,475,300	37,918,705	132,445,593	97,998,700	34,446,893	-----
1910.....	500,000,000	263,335,600	40,233,192	9,174,787	-----	6,860,300	2,314,487
1911.....	500,000,000	318,427,500	44,788,754	59,647,462	41,200,700	13,891,200	4,555,562
1912.....	500,000,000	334,805,700	45,509,536	17,098,982	13,652,000	2,726,200	720,782
1913.....	500,000,000	344,616,300	48,103,133	12,404,197	900	9,809,700	2,593,597
1914.....	500,000,000	344,681,900	48,120,477	82,944	-----	65,600	17,344
1915.....	500,000,000	380,477,100	55,296,721	42,971,444	-----	35,795,200	7,176,244
1916.....	500,000,000	395,603,600	58,357,271	18,187,050	-----	15,126,500	3,060,550
1917.....	500,000,000	435,641,200	58,555,359	40,235,688	39,106,000	331,600	198,088
1918.....	500,000,000	441,947,100	60,115,706	7,866,247	27,600	6,278,300	1,560,347
1919.....	500,000,000	441,981,200	60,122,426	40,820	500	33,600	6,720
1920.....	750,000,000	442,825,400	60,267,256	989,030	-----	844,200	144,830
1921.....	750,000,000	548,185,300	62,074,417	107,167,061	83,790,200	21,569,700	1,807,161
1922.....	750,000,000	699,347,400	64,140,093	153,227,776	97,920,100	53,242,000	2,065,676
1923.....	1,000,000,000	735,519,200	65,019,764	37,051,471	19,283,800	16,888,000	879,671
1924.....	1,000,000,000	888,478,100	65,880,531	153,819,697	128,253,700	24,705,200	860,767
1925.....	1,500,000,000	921,597,500	67,153,429	34,392,298	20,921,100	12,198,300	1,272,898
1926.....	1,500,000,000	1,064,327,800	68,468,081	144,044,952	134,912,800	7,817,500	1,314,652
1927.....	1,500,000,000	1,103,415,600	72,760,797	43,380,516	17,641,400	21,446,400	4,292,716
1928.....	1,500,000,000	1,289,691,400	78,610,732	192,125,735	164,494,300	21,781,500	5,849,635
1929.....	2,000,000,000	1,322,339,800	81,604,582	35,642,250	20,709,200	11,934,200	2,993,850
1930.....	2,000,000,000	1,795,651,200	271,400,763	663,107,581	218,667,100	254,644,300	189,796,181
1931.....	2,500,000,000	1,865,836,100	280,837,744	79,621,881	38,920,800	31,264,100	9,436,981
1932.....	2,500,000,000	1,866,227,500	281,018,238	571,894	-----	391,400	180,494
1933-35.....	2,500,000,000	1,866,227,500	281,018,238	-----	-----	-----	-----
Totals:	-----	-----	-----	-----	-----	-----	-----
1900-35.....	-----	-----	-----	2,095,473,138	1,135,092,000	679,362,900	281,018,238
1913-35.....	-----	-----	-----	1,796,930,502	984,649,500	546,772,300	235,508,702
1923-35.....	-----	-----	-----	1,383,758,245	763,804,200	403,075,900	216,878,145
1923-31.....	-----	-----	-----	1,383,186,351	763,804,200	402,684,500	216,697,651

¹ Includes \$51,772,600 par value of stock delivered in 1900 and subsequent years, as of Dec. 30, 1899, on 2-for-1 basis, in exchange for \$25,886,300 par value of outstanding stock of American Bell Telephone Co., in connection with consolidation completed during 1900.

² Includes premium of \$12,269,160 received upon sale in 1902, 1908, and 1909 of \$32,110,400 par value of treasury stock received from American Bell Telephone Co. in Dec. 30, 1899 consolidation which was credited to reserve for contingencies and surplus by the company.

³ Does not include \$51,772,600 par value of stock delivered in 1900 and subsequent years, as of Dec. 30, 1899, to stockholders of American Bell Telephone Co., in connection with consolidation referred to in note 1 above.

Source: Exhibit 1360-A, table 57, p. 293, and exhibit 1360-B, schedules 27A and 27B.

Stock Offers Under Subscription Rights at Par.

Since March 1900 there have been 13 offers of capital stock to stockholders under circulars as shown in table 70. A total of 11,493,294 shares was offered during the period 1900 to 1930, inclusive, of which 11,350,920 were subscribed by the holders of rights, or 98.76 percent of the total number of shares offered. The lowest

ratio of subscriptions to shares offered was 93.29 percent in 1921. In most years, over 98 percent, and often over 99 percent, of the shares offered has been subscribed by holders of rights.³⁰ This does not mean, however, that all of the stockholders took advantage of the offer to subscribe for additional shares of stock at \$100 per share. On the contrary, a large number of the stockholders of record, indeed, usually over 40 percent of the total number of stockholders at the time of stock offers, did not subscribe to the shares, but preferred to sell their subscription rights to others. In 1930, for instance, there was an offer of 2,579,407 shares, of which 99.86 percent was actually subscribed; but of the total number of stockholders on record date, namely, 508,778, only 261,574 or 51.41 percent of the total number of stockholders, subscribed for the shares offered. It is obvious that, in view of the almost 100 percent subscription for the shares, the stockholders who did not subscribe personally, nearly 250,000 of them, must have sold their rights to others. Because of the different amounts of stock held per stockholder, it is not possible to disclose from the facts summarized in tables 70 and 71, the number of shares that were subscribed by the stockholders originally entitled thereto, and the number taken by others through purchase of rights in the open market.³¹ It is, however, definitely established that between 40 and 50 percent of the stockholders preferred to sell their rights to others. This condition has prevailed in every year, where there is the necessary information available, when stock was offered to stockholders under subscription rights.

TABLE 70.—*Summary of capital stock offers at par to stockholders by American Telephone & Telegraph Co., years 1900 to 1935, inclusive*

Date of offer	Expiration date of rights	Basis of offer: one share for number of shares held	Total number of stockholders on record date	Number of shares offered at par
(a)	(b)	(c)	(d)	(e)
Apr. 18, 1900.....	June 30, 1900.....	5	(1)	103, 545
June 5, 1901.....	July 15, 1901.....	3	(1)	207, 090
June 10, 1902.....	Aug. 15, 1902.....	4	(1)	219, 370
June 15, 1903.....	Aug. 15, 1903.....	5	(1)	219, 432
June 5, 1907.....	June 26, 1907.....	6	19, 343	219, 252
June 20, 1911.....	Aug. 31, 1911.....	5	41, 128	550, 865
Nov. 22, 1916.....	Jan. 22, 1917.....	10	69, 963	395, 506
May 10, 1921.....	July 20, 1921.....	5	151, 853	898, 195
Aug. 24, 1922.....	Nov. 1, 1922.....	5	230, 387	1, 189, 152
May 20, 1924.....	Aug. 1, 1924.....	5	316, 048	1, 511, 575
May 19, 1926.....	Aug. 2, 1926.....	6	371, 347	1, 641, 275
May 16, 1928.....	Aug. 1, 1928.....	6	432, 004	1, 858, 630
Apr. 16, 1930.....	Aug. 1, 1930.....	6	508, 778	2, 579, 407
Total.....				11, 493, 294

¹ Not available.

Source: Exhibit 1360-A, p. 309.

³⁰ See table 71, below.

³¹ The Bell Telephone Securities Co. was active in buying and selling rights to facilitate this process of transferring rights from stockholders who did not wish or could not subscribe to stock to others who were willing to buy and exercise them. See exhibit 250, pp. 48-50.

TABLE 71.—*Number and percent of total stockholders subscribing, number and percent of total shares subscribed, and market prices of rights to subscribe to American Telephone & Telegraph Co. stock offers at par, years 1900 to 1935, inclusive*

Year of stock offer	Stockholders of record who exercised rights		Shares subscribed at par		Market prices of rights required to purchase 1 share at par		
	Number	Percent of total	Number of shares	Percent of total offered	High	Low	Average of high and low
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)
1900.....	(1)	(1)	102,972	99.45	\$42.50	\$35.00	\$38.75
1901.....	(1)	(1)	206,120	99.53	54.00	45.375	49.6875
1902.....	(1)	(1)	218,748	99.72	63.00	58.00	60.50
1903.....	(1)	(1)	218,320	99.49	32.50	24.6875	28.59375
1907.....	(1)	(1)	209,738	95.66	4.56	1.50	3.03
1911.....	23,074	56.10	548,536	99.58	36.25	26.25	31.25
1916.....	29,127	41.63	391,341	96.95	21.25	18.75	20.00
1921.....	58,647	38.62	837,902	93.29	4.375	.625	2.50
1922.....	129,965	56.41	1,172,039	96.56	23.125	14.375	18.75
1924.....	174,721	55.28	1,491,748	96.69	22.1875	14.6875	18.4375
1926.....	211,762	87.03	1,525,542	96.98	40.125	34.50	37.3125
1928.....	247,876	57.38	1,852,035	96.65	96.75	68.25	82.50
1930.....	261,574	51.41	2,575,879	99.86	150.00	96.00	123.00
Total.....			11,350,920	96.76			

¹ Not available.

² Does not include 219 shares included by company in number of shares subscribed under circular offers, which, however, were really sold at a premium since the rights to them were acquired by the company during the years 1900 through 1903 and were sold at a total of \$4,537.

³ Approximate.

Source: Exhibit 1360-A, pp. 309-311; Comptroller's Annual Report of American Telephone & Telegraph Co. for 1936, statements 141 and 144; and additional data obtained from company's records and files.

From 1900 to 1906, the annual dividend rate on American Co. stock was \$7.50 per share. From 1906 to 1921, it was \$8 per share, and since 1921 it has been \$9 per share. The reasons why only about half of the stockholders of record exercise their rights directly may be only inferred from the available data. One of the explanations may be that since stock has been offered usually on the basis of one share of stock for every five or six shares held, many stockholders who owned less than five or six shares would have to acquire rights from others, in order to complete the necessary number of rights that would entitle them to obtain an additional share of stock at par from the company. In the proportion in which they would have to do this, the price of the new stock to themselves would tend to approximate the market price of American Telephone & Telegraph Co. common stock, which would mean that they would be paying considerably more than \$100 per share. This necessity may have been a deterrent to holders of a small number of shares to participating in new stock issues. Between 35 and 40 percent of the total number of stockholders since 1920 at least, have owned on the average about 3 shares each.³² These people would certainly have to acquire either more rights from others, in order to be able to buy a share of American Co. stock under the circular offers, or sell their rights to others. Many have chosen the latter alternative.

The price of rights.—There was also a direct incentive to dispose of these rights because of the very high price that they have brought in the open market. With the exception of the years 1907, 1917 to 1921 inclusive, 1932, 1933, and 1935, American Telephone & Tele-

³² See exhibit 230, tables 10 and 11, pp. 32 and 33, respectively.

graph Co. common stock has consistently sold, even at its lowest, above par.³³ Although the usual range has been somewhere between \$120 and \$150 per share in the open market, the stock went up as high as \$310.25 in 1929, and as low as \$70.25 in 1932. In every year in which stock has been offered to stockholders at par, its market value has been above par, with the exception of short intervals in 1907 and 1921. Consequently, the rights to subscribe to American Co. common stock at par have had a market value which, under ordinary circumstances, would make up the difference between par and market value of the stock itself. The price of the number of rights required to purchase one share of stock at par, as shown in table 71, page 444, indicates that, with the exception of 1907 and 1921, these rights have carried very high market prices. The highest was in 1930, when six rights, which were required to buy one share of stock, at par from the company, were worth \$150 at the "high" and \$96 at the "low," the average for the period of offer from April 16, to August 1, 1930, being \$123 for six rights. In 1928, the highest market price for six rights was \$96.75, and the lowest \$68.25, the average for the period of offer from May 16 to August 1, 1928, being \$82.50. In other years as well, the rights have been very valuable. Only in 1907 and 1921, 2 years of severe market reaction, did the rights not carry any considerable market prices. Under these circumstances it is no surprise, naturally, that many stockholders preferred to sell their rights and capitalize on their market value.

*The meaning of rights.*³⁴—The price of rights has a distinct economic significance from several points of view. To make this clear, let us assume that all of the stockholders of record subscribed for the stock offered at par. In that case, there would be no change in the relative equity ownership of the different stockholders, since they would all be participating in the purchase of new shares in the same proportion in which they own shares already outstanding. Consequently, even though the equity value of the stock, namely, par value plus premium and surplus, is higher than the price at which the stock is offered, the reduction in equity value per share would apply equally to all shares outstanding and, therefore, to all stockholders in the proportion in which they hold stock. Furthermore, their participation in future earnings would also be in the same proportion in which they have held stock in the company. If, however, existing stockholders allow an outsider to obtain shares in the company, or allow other stockholders to increase their proportion of the shares held in the company, by paying in less than the equity value of the stock, then the equity value, as well as the right to participate in future earnings of the company is diluted in favor of the new stock and therefore, the existing stockholders whose proportion of ownership is thereby diminished lose a part of their equity and a proportionate share of their right to participate in future earnings. The amount which stockholders realize upon sale of subscription rights may be considered in the nature of compensation for the proportion of their equity and consequently of their right to participate in future earnings surrendered in connection with such sales, and any resulting loss in equity value.³⁵

³³ See table 73, p. 448, *infra*.

³⁴ See exhibit 2115, pp. 32-33.

³⁵ When stockholders sell their subscription rights and they are exercised by others, such stockholders always lose a part of their proportionate equity in the company. A loss in equity value occurs only when new stock is offered at a price below the equity value of the then outstanding shares.

The total market value of the number of rights required to entitle the holder to purchase one new share of stock at the circular offering price tends to approximate the amount by which such offering price is less than the market price of the then outstanding shares. Thus, the approximate market price of rights is ascertainable through a simple arithmetical calculation. The extent to which the market value of any particular issue of rights is governed by the general rule laid down above is affected, of course, by circumstances surrounding the issue, such as the basis of the offering (number of rights required to entitle the holder to one new share, basis of payment for new shares, etc.), and the percent relation of the offering price to both the market price of the outstanding stock and its equity value.³⁶

Stock Issues at Premium.

Up to this point, the circumstances surrounding the issue of stock at par under circular offers to stockholders have been considered. Nearly 40 percent of the shares now outstanding, however, have been issued at premium. As stated before, in the years 1900 to 1935, inclusive, stock of the par value of \$679,362,900 has been issued above par, resulting in a premium of over \$281,000,000. These shares have been issued under different circumstances as follows:

Particulars	Par value	Premium	Average paid-in capital
Issued to retire convertible bonds.....	\$426,952,100	\$216,164,664	\$150.63
Unsubscribed shares sold.....	13,884,600	5,016,394	136.13
Other shares issued.....	238,526,200	59,837,180	125.09
Total.....	679,362,900	281,018,238	141.36

Source: Tables 72 and 73, *infra*.

The largest amount of stock issued at premium consisted of those shares issued in conversion of bonds. In 1929 a large issue of convertible bonds was offered to stockholders, as discussed in section 3, most of which was converted in 1930 into \$206,189,700 par value of stock, resulting in a premium of \$164,855,341.³⁷ The average rate at which this conversion took place was \$179.95 per share.³⁸ Previous to 1930 the largest amount of conversion took place in 1909, when \$75,888,300 par value of stock was issued in conversion of bonds, which produced a premium of \$25,602,733, or at the rate of \$133.74 per share. With the exception of some \$59,000,000 par value of stock issued in conversion of bonds in the years 1920-25, all other conversions were made at a rate higher than \$120 per share. The average rate of conversion for the whole period 1900-35, as stated above, was \$150.63; for the period 1913-35 it was \$155.85, and for the years 1923-31 it was \$173.72.

³⁶ Naturally, changes in the market rate of return as expressed by fluctuations of the market price of the stock would also influence the price of rights. Speculative factors generated by the very offer of rights create additional forces that affect the price of rights.

³⁷ See table 72.

³⁸ See table 73.

TABLE 72.—Summary of capital stock of American Telephone & Telegraph Co., issued at premium years 1900 to 1935, inclusive

Year ended Dec. 31—	Total stock issued at premium		Issued to retire con- vertible bonds		Unsubscribed shares sold		Other shares issued	
	Par value	Premium	Par value	Premium	Par value	Premium	Par value	Premium
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)
1900.....								
1901.....	\$57,300	\$13,917			\$57,300	\$13,917		
1902.....	5,097,000	2,691,624			97,000	16,624	¹ \$5,000,000	\$2,675,000
1903.....	5,300	3,115			5,300	3,115		
1904.....	3,200	993			3,200	993		
1905-07.....								
1908.....	5,951,400	762,163			951,400	12,163	¹ 5,000,000	750,000
1909.....	97,998,700	34,446,893	\$75,888,300	\$25,602,733			¹ 22,110,400	8,844,160
1910.....	6,860,300	2,314,487	6,860,300	2,314,487				
1911.....	13,891,200	4,555,562	13,891,200	4,555,562				
1912.....	2,726,200	720,782	2,726,200	720,782				
1913.....	9,809,700	2,593,597	9,809,700	2,593,597				
1914.....	65,600	17,344	65,600	17,344				
1915.....	35,795,200	7,176,244	35,795,200	7,176,244				
1916.....	15,126,500	3,060,556	14,728,700	2,988,946	397,800	71,604		
1917.....	931,600	198,088	931,600	198,088				
1918.....	6,278,300	1,560,347	278,300	60,347			² 6,000,000	1,500,000
1919.....	33,600	6,720	33,600	6,720				
1920.....	844,200	144,830	844,200	144,830				
1921.....	21,569,700	1,807,161	15,123,900	1,042,717	6,445,800	764,444		
1922.....	53,242,000	2,065,676	23,721,600	1,948,856			² 29,520,400	116,820
1923.....	16,888,000	879,671	6,428,200	662,276			³ 10,459,800	217,395
1924.....	24,705,200	860,767	7,603,900	686,562			³ 17,101,300	174,205
1925.....	12,198,300	1,272,898	6,031,900	589,232			² 6,166,400	683,666
1926.....	7,817,500	1,314,652			449,600	206,138	³ 7,367,900	1,108,514
1927.....	21,446,400	4,292,716			1,291,900	1,070,855	³ 20,154,500	3,221,861
1928.....	21,781,500	5,849,935			2,032,700	1,780,241	³ 19,748,800	4,069,694
1929.....	11,939,200	2,993,850					³ 11,939,200	2,993,850
1930.....	254,644,300	189,796,181	206,189,700	164,855,341	2,152,600	1,076,300	² 31,302,000	8,864,540
1931.....	31,264,100	9,436,981					⁴ 15,000,000	15,000,000
1932.....	391,400	180,494					³ 31,264,100	9,436,981
1933-35.....							⁴ 391,400	180,494
Totals:								
1900-35.....	679,362,900	281,018,238	426,952,100	216,164,664	13,884,600	5,016,394	238,526,200	59,837,180
1913-35.....	546,772,300	235,508,702	327,586,100	182,971,100	12,770,400	4,969,582	206,415,800	47,568,020
1923-35.....	403,075,900	216,878,145	226,253,700	166,793,411	5,926,800	4,133,534	170,895,400	45,951,200
1923-31.....	402,684,500	216,697,651	226,253,700	166,793,411	5,926,800	4,133,534	170,504,000	45,770,706

¹ Represents sales of treasury stock acquired from American Bell Telephone Co. in connection with 1900 consolidation as of Dec. 31, 1899. The premium of \$12,269,160 on these shares was credited to surplus and reserve for contingencies, and is not included in the premium of \$268,749,078 carried on the books at Dec. 31, 1935.

² Exchanged for \$7,500,000 par value of common stock of Bell Telephone Co. of Pennsylvania acquired from New York Telephone Co.

³ Represents shares delivered to employees upon completion of payments under employees' installment purchase plans.

⁴ Represents shares delivered in exchange for 150,000 shares of no par value common stock of Teletype Corporation, valued at \$200 per share by directors of American Co.

Source: Exhibit 1360-B, schedules 27A and 27B.

The total unsubscribed stock sold during the years 1900-1935 was \$13,884,600 par, which brought in a premium of \$5,016,394, or an average price of \$136.13. Some 21,526 shares were sold in 1930, at an average price of \$150 per share. Another 20,327 shares were sold in 1928, at an average price of \$187.58 per share. Again, in 1927, 12,919 shares were sold, at \$182.89. The lowest price ever obtained for unsubscribed shares was an average of \$101.28 for 9,514 shares in 1908. In 1921, 64,458 shares³⁹ were sold, at an average price of \$111.86, through Kidder, Peabody & Co. In all other years, however, unsubscribed shares were sold at anywhere from \$117 to \$187.50 per share.

³⁹ Consisting of 4,165 shares not taken by right holders under the 1916 offer, and 60,293 shares not subscribed under the 1921 offer. At the time of this sale Kidder, Peabody & Co. was conducting a publicity campaign to help American Co. stock sales. For details see exhibit 250, pp. 17-19.

Shares issued to employees have also been subscribed for at a price higher than par. These shares have been sold under employees' purchase plans, and the average premium obtained on them has been over \$16 per share. Again, in 1918, 60,000 shares of American Co. stock were exchanged for 75,000 shares of the common stock of Bell Telephone Co. of Pennsylvania, acquired from the New York Telephone Co. and recorded as an investment at their par value which gave a paid-in capital per share of \$125 to the American Co. stock issued. In 1930, 150,000 shares of American Co. common stock were exchanged for a like number of shares of the common stock of Teletype Corporation and both were recorded at \$30,000,000 (\$200 per share), the value specified for the Teletype stock by the board of directors of the American Co. The market price of American Co. stock at the end of September 1930, when this transaction was consummated, was slightly over \$200 per share.

TABLE 73.—Comparison of average amount paid in each year per share of American Telephone & Telegraph Co. capital stock issued at premium, with stock-market quotations, years 1900 to 1935, inclusive

Year ended Dec. 31—	All stock issued at premium	Stock issued in conversion of bonds	Unsub- scribed shares sold	Other shares issued	Stock-market quotations		
(a)	(b)	(c)	(d)	(e)	High	Low	Annual av- erage ¹
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)
1900.....					\$161.00	\$135.00	\$146.18
1901.....	\$124.29		\$124.29		182.00	151.00	163.03
1902.....	152.81		117.14	\$153.50	186.00	160.75	167.17
1903.....	158.77		158.77		169.00	117.25	143.25
1904.....	131.03		131.03		149.50	121.00	133.28
1905.....					148.50	131.00	140.95
1906.....					144.63	130.00	136.89
1907.....					133.00	88.00	111.75
1908.....	112.81		101.28	115.00	132.63	101.00	119.11
1909.....	135.15	\$133.74		140.00	145.13	125.00	137.71
1910.....	133.74	133.74			143.38	126.75	137.27
1911.....	132.79	132.79			153.13	131.50	141.41
1912.....	126.44	126.44			149.13	137.63	143.97
1913.....	126.44	126.44			140.00	110.00	128.11
1914.....	126.44	126.44			124.25	114.00	120.98
1915.....	120.05	120.05			130.25	116.00	122.62
1916.....	120.23	120.29	118.00		134.50	123.13	129.51
1917.....	121.26	121.26			128.50	95.75	118.71
1918.....	124.85	121.68		125.00	109.25	90.63	100.71
1919.....	120.00	120.00			108.63	95.00	102.27
1920.....	117.16	117.16			100.75	92.13	96.81
1921.....	108.38	106.89	111.86		119.50	95.75	105.85
1922.....	103.88	108.22		100.40	128.25	114.50	121.64
1923.....	105.21	110.30		102.08	128.75	119.13	123.21
1924.....	103.48	109.03		101.02	134.75	121.13	127.17
1925.....	110.44	109.77		111.09	145.00	130.63	138.52
1926.....	116.82		145.85	115.05	151.00	139.63	145.47
1927.....	120.02		182.89	115.99	185.50	149.25	167.87
1928.....	126.86		187.58	120.61	211.00	172.00	182.48
1929.....	125.08			125.08	310.25	193.25	237.01
1930.....	174.53	179.95	150.00	151.54	274.25	170.38	218.14
1931.....	130.18			130.18	201.75	112.13	166.50
1932.....	146.11			146.11	137.38	70.25	105.15
1933.....					134.75	86.50	113.42
1934.....					125.25	100.13	113.84
1935.....					160.50	98.88	126.34
Totals:							
1900-35.....	141.36	150.63	136.13	125.09			
1913-35.....	143.07	155.85	138.91	123.04			
1923-35.....	153.81	173.72	169.74	126.89			
1923-31.....	153.81	173.72	169.74	126.84			

¹ Prior to 1910, annual averages represent the averages of the monthly averages of high and low sales prices, whereas after 1909 they represent the averages of the monthly averages based on daily sales prices.

Source: Exhibit 1359, table 53, p. 176; exhibit 1360-B, schedules 27A and 27B; and Comptroller's Annual Report of American Telephone & Telegraph Co. for 1936, statement No. 141.

SECTION 5. SIGNIFICANCE OF BELL SYSTEM FINANCIAL PRACTICES

For purposes of exposition, it has been necessary to discuss the various phases of Bell System's financial experience in isolated segments. This has been the approach in the preceding four sections of this chapter, as well as in chapter 18 of this report where the profits of the Bell System are analyzed. From the management's point of view, however, the financial policies and their results are conceived as an integrated machinery with two primary purposes, namely, facility of obtaining funds to finance the business, and producing a generous income for the stockholders.

To understand the operations of the Bell System's financial mechanism, it is necessary to summarize the facts pertaining to capitalization, financing, and profits, which reflect certain phases of the policies adopted by the management of the American Co. In section 1 of this chapter it was stated that the capital structure of the American Co., as well as that of the associated companies, was composed of common-stock equity to more than 50 percent of total capitalization. In the case of American Co., at December 31, 1935, common-stock equity represented almost 84 percent of total capitalization. In the case of the associated companies, common-stock equity amounted to over 70 percent of total capitalization. The balance of total capitalization was made up of preferred stock, 5 percent, and long-term debt, 23 percent.⁴⁰

The capital structure of the Bell System, on account of a small proportion of long-term debt in comparison with total capitalization, creates a safety of equity investment which is rarely equaled by other public-utility systems, which usually have a much higher ratio of fixed income-bearing securities. As a result of this capital structure, composed largely of stock equity, the principal of the investment is safeguarded to some extent from the hazards of business fluctuations. Furthermore, the equity of the stockholder in the earnings of the system is not subject to a leverage that would be created by pyramiding of capital structures, and consequently it is not subject to accentuated fluctuations. In contrast to certain public-utility holding companies with pyramided capital structures which made them subject to the accentuated impact of diminishing earnings during times of business depression, the American Telephone & Telegraph Co. common-stock holder is, by and large, subject only to the direct influence of changes in the gross and net earnings, without the element of accentuation due to leverage. Consequently, the net income available to the stockholder of the American Co. has shown a stability commensurate with the stability of the earnings of the telephone system as a whole, which, though it has varied, has never reached dangerously low levels or the vanishing point, because of the comparative stability of rates and the essential need for the service.

The safety of investment and the stability of earnings are substantiated by the record of profits shown in chapter 18. The dividends have been continuous, stable, and substantial since the first payment in 1880 by American Bell Telephone Co. From 1900 to 1906, dividends were at the rate of \$7.50 per share; from 1906 to 1921, at the rate of \$8 per share; and since that date, at the rate of \$9 per share.

⁴⁰ See ch. 3, sec. 2.

The net income of American Telephone & Telegraph Co. has been sufficient not only to pay such dividends, but has provided also a substantial surplus. The average recorded net income of American Co. stock for the entire period 1900-35, inclusive, was \$9.86 per share. If the depression period of the early thirties is eliminated, the average recorded net income from 1900 through 1929 was \$11.44 per share. If the equity of the American Co. in the Bell Telephone System's undistributed income is included, these figures should be increased to \$10.74 per share for the 36-year period and to \$13.18 for the 30-year period. It is needless to recite the various indices of profitability of American Co. common stock, as they are treated at greater length in chapter 18. The evidence is incontrovertible that the income and dividends on American Telephone & Telegraph Co. common stock have been both stable and large.⁴¹

The large rate of return on American Co. stock is the result not of leverage based upon pyramiding of security issues as in some other utility holding companies, but is due to the profitable investment, in addition to the paid-in capital, of large amounts of funds provided from operations, represented by undivided profits and depreciation reserves. The enhancement of earning power of the common stock due to these reasons is not subject to the fluctuations that pyramiding of security issues causes. This explains why the American Co. was still able to show, even in 1932 and 1933, recorded net income well above \$7 per share and Bell Telephone System net income available to American Co. stock well over \$6 per share; whereas certain other utility holding companies, on account of the substantial amount of funded debt and preferred-stock capitalization of the underlying companies, had to take the whole impact of receding business in exaggerated form.

Cost of Acquiring Capital.

Theodore N. Vail announced in 1912, while he was president of the American Co., that the policy of the Bell System is to be—

* * * satisfied with reasonable average returns on their outstanding capital obligations, which compared with other business investments should be about 8 percent, and will not expect or encourage any expectation of more than this.

In the 1920 annual report of the American Co. it was again stated:

The stock of the (American) company as an investment security may be compared as to market stability with high grade bonds of railroad and industrial companies, rather than with stocks. * * *

In many rate cases, company witnesses have stated, while discussing the cost of money, that in the best judgment of the American Co., the \$9 dividend is essential in order to obtain capital.

"Cost of money" as a part of license contract costs.—In some rate cases the American Co. has introduced certain calculations of "cost of money" which include dividend payments to common-stock holders of the American Co. as a part of the cost of capital. The American Co. has considered dividend payments as part of the cost of capital in claims intended to support the cost of financial services rendered under the license contracts. The nature of the financial costs and the method of calculating these costs as a part of the cost of furnish-

⁴¹ During the years 1932-35, dividends were maintained at the \$9-per-share rate, though the net recorded income of the American Co. was less. This situation has now been corrected, as in 1936 and 1937 net recorded income of the American Co. applicable to its stock was above the dividend requirements.

⁴² See American Telephone & Telegraph Co., Annual Reports to Stockholders for 1911, p. 9, and for 1920 p. 42.

ing license contract services have been discussed in chapter 6.⁴³ There are, however, certain peculiar conditions surrounding the theory of including dividends as a factor in computing license contract costs which deserve further treatment.

The "cost of money" enters into the financial costs allegedly incurred in rendering license contract services, first, as cost of funds held available for the benefit of associated companies; and, secondly, as the cost of temporary advances. In the first case the difference between the income from the temporary investment of funds held available and the "cost of money," including dividends, is included as a part of the cost of furnishing license contract services to the associated companies, upon the assumption that a large part of the liquid assets held by the American Co. are for their use.⁴⁴ The second type of cost consists of the difference between the interest on temporary advances, 5.88 percent until October 1, 1936, and 4.9 percent since, and the "cost of money."⁴⁵ There is a third element, a comparatively minor item, which involves the cost of money on the investment of the American Co. in equipment necessary to render license contract services.

The "cost of money" is calculated by applying all payments on stocks and obligations to the average amount of capital stock, premium, surplus, stock installments, funded debt, and notes. The largest item of "cost" is, of course, the \$9 per share dividend. The calculation is made as shown in table 74, which is taken from an exhibit presented by the company in rate cases to show the "cost of money" in 1935. According to the company's calculations the "cost of money" in 1935, including dividend payments, was 6.79 percent. The American Co. management has repeatedly claimed the right to charge as a part of the cost of rendering license contract services the difference between this rate and the interest actually charged in 1935 to associated companies on average amount of advances and the difference between 6.79 percent and the income on a large portion of its temporary investments presumably held available for the associated companies.

TABLE 74.—*American Telephone & Telegraph Co. average cost of funds used in business, year 1935*

Particulars	Average amount for year	Dividends, interest, and amortization charges	Average rate paid
			<i>Percent</i>
Capital stock.....	\$1,866,227,500.00	\$167,960,475.00	9.00
Capital stock premiums.....	268,749,077.67		
Total.....	2,134,976,577.67	167,960,475.00	7.87
Surplus unappropriated and appropriated.....	255,640,072.13		
Total.....	2,390,616,649.80	167,960,475.00	7.03
Capital installments.....	6,434,205.33	247,347.41	3.84
Funded debt.....	419,372,071.77	23,452,599.00	5.59
Notes payable to pension fund trustees.....	11,022,112.50	440,884.50	4.00
Total.....	2,827,445,039.40	192,101,305.91	6.79

Source: Exhibit 2115, table 3, p. 29.

⁴³ See pp. 162-163, *supra*.

⁴⁴ For the methods of calculating this cost, see exhibit 1359, tables 40 and 41, pp. 121 and 122.

⁴⁵ See *ibid.*, table 44, p. 127.

The rationalization of American Co. executives in defense of their proposition went through certain changes in the course of the past decade. First, they took the position that no matter what the dividend rate was it would be loaded as a factor in the "cost of money."⁴⁶ As a result of constant attack by counsel representing the public, by 1932 the company officials had retired to the position that dividends are a "cost of money" only to the extent that they are reasonable. Finally, in the more recent cases (as in the hearings before the Wisconsin Public Service Commission in the State-wide rate case in 1935) company witnesses have testified that dividends are costs if the company has to pay them in order to obtain capital.⁴⁷ This theory has been applied to the \$9 dividend on American Co. common stock as being necessary, in the judgment of the management to obtain capital.

"Cost of money" and the rate of return.—In a few cases, the associated companies have contended that the State commissions should consider the cost of money to the American Co., including the dividend payments on its common stock, as a relevant factor to be used in considering the return to be allowed on the value of telephone property.⁴⁸ The Public Utilities Commission of the District of Columbia criticized inclusion of the \$9 discretionary dividend paid by the American Co., in its consideration of the telephone rates of Chesapeake & Potomac Telephone Co.:⁴⁹

Dividends paid on capital stock are improperly included in the computation (of cost of money to the American Co.) since they represent amounts elected by the company to be disbursed rather than the necessary costs of obtaining funds used in the business. To permit their inclusion in the computation creates a vicious cycle. They have no relation to cost of obtaining funds but are governed by earnings from the operating companies and surplus whereas it is the rate of return of one of the companies which is in question. Eliminating dividends paid from the computation, the average cost of funds to the American Co. during the year 1933 becomes 5.55 percent based upon the evidence.

The Wisconsin commission arrived at the same conclusion by reference to the behavior of the market price of American Co. common stock, and of rights. It said in 1936:⁵⁰

The company exhibits assume that the fixed dividend of \$9 a share on American Telephone & Telegraph Co. common stock represents the cost of funds invested by American Telephone & Telegraph Co. common-stock holders. Whatever may have been the reasons advanced to justify the \$9 dividend rate when first established or its continuance throughout the depression, it does not appear to us to be a necessary cost of attracting capital at present. This is reflected in the high premiums now being paid for this stock in the market. If this dividend rate is continued in the face of current market requirements with resulting enhancement through valuable stockholders' rights, we nevertheless see no good reason for burdening Wisconsin telephone subscribers with support of this rate or including it as an element in the rate of return allowed the Wisconsin Co.

These opinions of the District of Columbia commission and of the Wisconsin commission focus attention upon the inacceptability of the voluntary distribution of profits expressed in the \$9 dividend as an item of cost of capital, in both theory and fact.

⁴⁶ For the methods of calculating this cost, see *ibid.*, pp. 150-152.

⁴⁷ See *ibid.*, pp. 156-157.

⁴⁸ Re *Southern California Telephone Co.* (1924), P. U. R. 1925C, 627; also Re *Chesapeake & Potomac Telephone Co.* (1934), 4 P. U. R. (N. S.) 346.

⁴⁹ Re *Chesapeake & Potomac Telephone Co.* (1934), 4 P. U. R. (N. S.) 346, 362.

⁵⁰ Re *Wisconsin Telephone Co.* (1936), 13 P. U. R. (N. S.) 224, 316.

The Control of the Cost of Money to Associated Companies.

The evidence here presented indicates that the American Co. controls the cost of funds to the associated companies. The operating subsidiaries are not allowed to resort to the money market on their own merits, without the advice and consent of the American Co. Most of their financial needs are met, in the first instance, by advances from the American Co., upon which the net accrual charge was 5.88 percent until October 1, 1936, and 4.9 percent since then. The major part of such advances have been liquidated by conversion into capital stock of the associated companies. In some instances, such advances to certain companies have been liquidated from proceeds of bonds issued by those companies, with the advice and consent of the American Co. When the advances are converted into capital stock it is issued to the American Co. at par. The dividends on associated companies' stocks have been most often \$7 or more per \$100 par value. The most frequent rate is \$8, and a few of the more profitable companies have paid \$9 from time to time. Inasmuch as the American Co. owns a controlling capital stock interest in all but two of the associated companies and therefore elects the majority, if not all, of their directors, it indirectly controls the rates of dividends paid by them, subject, of course to the amount of surplus available for that purpose.

CHAPTER 16

THE BELL SYSTEM PENSION PLAN¹

It is the purpose of this chapter on the Bell System pension plan to set forth the stated purposes of Bell System companies in establishing a pension plan, the provisions of the plan, the operations under the plan, and the results of these operations in relation to Bell System companies including their employees, which include their undertakings and obligations under the plan and the employees' rights to service pensions.

The plan announced in 1913 was a voluntary undertaking of the American Co. and provided for benefits on account of sickness, disability, and death, and payment of service pensions. The payment of service pensions under the plan, to retired employees, was first placed on a formal and systematic basis by the American Telephone & Telegraph Co. at that time. Associated companies of the Bell System, as well as certain affiliated companies, adopted similar plans at approximately the same time as the American Co.

Stated Purposes of the Plan.

In announcing the formal pension plan to Bell System employees and to the public in 1913, Mr. Theodore N. Vail stated as follows:

The intent and purpose of the employer in establishing a plan of benefits is to give tangible expression to the reciprocity which means faithful and loyal service on the part of the employee, with protection from all the ordinary misfortunes to which he is liable; reciprocity which means mutual regard for one another's interest and welfare.

Earlier records of the company stated the general purpose of a pension plan as follows:

It promotes the efficiency of the service by permitting the retirement of incapacitated employees, without working very great hardship on old and faithful employees.²

More recently the Bell System has stated the necessity for some method of handling the superannuation problem as follows:

If it is ignored, it results ultimately in inefficient service to the company's patrons and increased cost to the stockholders. If it is recognized, it can best be solved by a definite plan bringing about an orderly retirement of all employees and containing provisions that will operate effectively on all classes of employees.³

Provisions of the Plan.

Under the terms of the plan as adopted originally, in October 1912, the American Co. undertook to establish, maintain, and administer a fund to be known as the "employees' benefit fund" for the payment of definite amounts to its employees when they were disabled by accident or sickness or when they were retired from service, or, in the event of death, to their dependent relatives.

¹ For detailed development of this subject, see exhibits 136, 581, 582, and 583.

² Letter from H. N. Thurber to U. N. Bethel, dated December 19, 1903.

³ See American Telephone & Telegraph Comment No. 5, p. 6.

The Commission's investigation in general was restricted to the service-pension features of the "plan for employees pensions, disability benefits, and death benefits," for the reasons that payment of service pensions will become an increasing burden with the passage of years and the increase in average age of employees, while payments for sickness, disability, and death benefits will tend to bear a more or less uniform relationship to the total pay roll and also have been an unavoidable cost by reason of the workmen's compensation acts of the various States. It is appropriate to point out, however, that in addition to service pensions, the American Co., as well as all companies adopting the Bell pension plan, undertook to provide for the payment of definite amounts to its employees as accident disability benefits, sickness benefits, employee death benefits, and pensioner death benefits.

The resolution of the board of directors of the American Co. adopting its plan provided that the sum of \$2,000,000 be appropriated from surplus as of December 31, 1912, for the establishment of the employees' benefit fund from which benefits were to be paid.⁴ The company constituted itself custodian of the fund and stipulated that it should draw interest at the rate of 4 percent per annum on the average balance, payable semiannually. It guaranteed the disbursement of the fund in accordance with its promulgated regulations.

The company specifically limited its obligation under the plan:⁵

1. To safeguarding the sum already appropriated.
2. To crediting said sum 4 percent per annum of the unexpended balance of the fund.
3. To the appointment of a committee to administer the fund according to these regulations.
4. To making payments out of the fund upon the order of the committee.
5. To adding to the fund at the end of the fiscal year such amount as will restore it to the original amount, provided that such addition shall in no year exceed \$500,000.

Provision was made in the regulations for the order in which the employees' benefit fund should be disbursed, in the event it should prove insufficient to meet the payments provided in the plan (and provided the shortage was not voluntarily made up by extra appropriation by the company). Under the terms of the plan, pension payments were given a preferred status over all other benefits payable out of the fund.

Notwithstanding the undertaking to establish the employees' benefit fund, and the appropriation that was made for its establishment, the company did not in fact establish an earmarked "employees' benefit fund." It did, however, set up on its books a reserve account entitled "Reserve for employees' benefit fund," to which it credited the initial appropriation of \$2,000,000, accretions, and other amounts subsequently appropriated until January 1, 1927. The amounts of all benefits paid under the plan prior to 1927 were charged against this reserve, and in turn, credits, chargeable to expenses, were made to the reserve annually in amounts aggregately equal to such charges. These latter amounts included as a separate item the aforementioned 4 percent per annum of the "unexpended balance."

⁴ Resolution of board of directors, American Telephone & Telegraph Co., dated October 15, 1912.

⁵ Sec. 11, Plan for Employees' Pensions, Disability Benefits, and Insurance; American Telephone & Telegraph Co. and Associated and Allied Companies; January 1, 1913.

Plans substantially the same in principle as that of the American Telephone & Telegraph Co. were adopted by the companies constituting the Bell System, and allied companies, which have been modified in the same manner as the American Co.'s plan.⁶

Modification of the plan (1927-28).—The plan as promulgated on January 1, 1913, has been amended from time to time, and the provisions of the present plan (including amendments to December 1, 1936) will be described in this report. Major modifications in the plan took place in 1927 and 1928. The principal changes made at that time are essential to a description of the present plan. For convenience and brevity, only the plan of the American Co. will be discussed. The plan itself and the instructions thereunder to the trustee were substantially amended in 1938, subsequent to the date the record in the special investigation was closed. These changes are referred to where necessary in connection with the discussion which follows.

By resolution of its board of directors dated December 21, 1927, effective January 1, 1927, the American Co. eliminated from the plan the limitation with respect to the amount (\$500,000) which would annually be appropriated to maintain the pension fund intact.

To meet the obligation under the plan to pay service pensions granted after January 1, 1927, the resolution provided that a pension fund should be established and segregated from the assets of the company, and held and disbursed only for service-pension purposes by a trustee to be appointed by the president of the company, subject to the approval of the executive committee or the board of directors, under an agreement defining the terms upon which such fund should be held and administered.

The resolution further provided that for employees with 15 years or more of service there should be charged to operating expenses and paid into the pension fund each year, starting with 1927, amounts which, actuarially determined and with allowance for interest accretions, would provide, at the time such employees became eligible to retire on pension at their own request under said payment, the full estimated present worth of the service pensions to which they are then entitled.^{7 8}

The American Co. thereby changed from the "disbursement" or "pay as you go" method to an "accrual" method of providing for pension-payments service. Under the former method, pension payments were charged to operating expenses when and as made, but were cleared through the employees' benefit reserve account.

The Uniform System of Accounts for Telephone Companies prescribed by the Interstate Commerce Commission and in effect in 1927

⁶ During the period October 15, 1912, to December 31, 1935, the Bell pension plan was adopted by 149 associated and allied companies. At December 31, 1935, of the 149 companies, 99 companies were still operating under the plan, 84 were inactive although not dissolved, 2 had been sold, 1 had been dissolved, and 3 had abandoned the plan. The 99 companies then operating under the plan included the American Co., the 23 associated companies, 28 companies in which the American Co. directly or indirectly controlled 50 percent or more of the voting stock, 5 telephone companies in which the American Co. or its subsidiaries owned more than 10 percent but less than 50 percent of the voting stock, and 1 independent telephone company. Of the 28 companies in which the American Co. controlled 50 percent or more of the voting stock, 16 were operating telephone companies and 12 were nontelephone companies. These latter 12 companies included Western Electric Co., Inc., and Electrical Research Products, Inc.

⁷ The basis of computing the amounts of accruals was changed in 1928. By resolution of the board of directors adopted November 21, 1928, it was directed that charges to expenses and payments to the trustee of the pension fund should be made, effective January 1, 1928, on the basis of full service of the employees, instead of beginning after the expiration of 15 years as theretofore directed by the board. Provisions for making accruals on the full service basis were not applied by the New England Telephone & Telegraph Co. and the Michigan Bell Telephone Co. until 1929.

⁸ It appears that the resolution did not take into account the "unfunded actuarial liability," discussed herein below in this chapter.

contained provisions with respect to accounting for payment of service pensions on what has been referred to as the "pay as you go" basis. It did not specifically outline procedure to be followed in connection with an accrual method of accounting for the cost of service pensions. Neither did it specifically prohibit such accounting for the cost of service pensions. The proposed plan for accrual accounting and cost of pensions was submitted to the Interstate Commerce Commission, which, on December 19, 1927, entered an order specifically outlining procedure to be followed in connection with accrual accounting for pensions under certain specified conditions. This order, in part, provided:⁹

If a carrier has definitely undertaken by contract to pay pensions to employees when regularly retired for superannuation and/or disability and has established a fund to be held in trust for such pension purposes, the carrier shall charge to this account monthly amounts determined through the application of equitable actuarial factors to the current pay rolls, which together with interest accruals on the trust funds, will as nearly as may be provide for the payment of such pensions, or for the purchase of annuities corresponding thereto.

* * * * *

Before adopting the accrual plan of accounting for pensions the carrier shall inform the Commission of the details of its pension plan, giving full statement of the facts which in its judgment establishes a contractual obligation for pension payments together with the actuarial formula under which it proposes to create its pension trust fund, and also a copy of the declaration of trust under which the fund is established.

After the adoption of the resolution of December 21, 1927, the company furnished the Interstate Commerce Commission with a copy of the amended plan, the resolution of revision, the trust agreement, and a memorandum relative to the method of computing accruals for 1927.

The Uniform System of Accounts for Telephone Companies prescribed by the Interstate Commerce Commission to become effective January 1, 1933, and by the Federal Communications Commission to become effective January 1, 1937,¹⁰ contained provisions identical in effect with those quoted above.

After the revision of the plan on December 21, 1927, the American Co. maintained the employees' benefit reserve until June 30, 1928, although the company commenced making pension accruals as of January 1, 1927. On September 12, 1928, by resolution of the board of directors, it was provided that the company should pay to the Bankers Trust Co.,¹¹ as trustee of the pension fund, the amount of the assets represented by the employees' benefit reserve as of June 30, 1928, and that the amount so paid should be used exclusively for service pension purposes under the plan, such portion thereof as was required to meet service pensions granted to take effect prior to January 1, 1927, to be applied to that end, and the remainder to service pensions granted to take effect thereafter. Upon this payment to the trustee, the employees' benefit reserve was to be eliminated from the accounts of the company.

⁹ Order of the Interstate Commerce Commission, dated December 19, 1927.

¹⁰ Telephone Division order No. 7-C, dated June 19, 1935, effective January 1, 1936. Its effective date, however, was delayed through an injunction action instituted by various telephone companies until January 1, 1937. Account 672—relief and pensions—has been supplemented by Telephone Division order No. 7-E.

¹¹ A trust agreement, effective December 31, 1927, was executed between the American Co., as well as certain other companies operating under the plan, and the Bankers Trust Co. (See p. 460 below.) As of its effective date, there was transferred to the trustee, as the initial pension fund, a sum representing the difference between pension accruals for 1927 and pension payments made during 1927 to pensioners awarded pensions after January 1, 1927.

The payment was made to the trustee of the pension fund, and the employees' reserve account was eliminated from the accounts of the company as of June 30, 1928. Also, since that date, all payments to employees retired on service pensions have been paid from the pension fund. Payments of all other benefits under the plan are charged to operating expense accounts of the company when and as paid.

Effective January 1, 1928, the accounting for cost of service pensions under the accrual plan was changed from the 15-year-service basis of accrual which was adopted effective January 1, 1927, to the full service accrual basis. This change in accounting procedure means that accruals on an actuarially determined basis, are first made for each employee as of the date he enters the service of the company rather than only when employees have served at least 15 years.

Types and amounts of pension benefits.—Service pensions are divided into three categories, namely, class A, class B, and class C pensions. Eligibility for a service pension is dependent upon an employee's attaining a specified age and completing a required term of employment.¹² Employees who fulfill the requirements for class A pensions may, at their own request, or at the discretion of the employees' benefit committee which administers the plan, be retired from active service and become eligible for service pensions; whereas employees who fulfill the requirements for class B and class C pensions may be retired from active service and become eligible for a service pension only at the discretion of such committee, with approval of the president or a designated vice president. The age and employment qualifications are given in the following tabulation:

Type of pension	Age requirement		Term of employment requirement
	Male	Female	
Class A.....	60	55	20 or more years.
Class B.....	55-59	50-54	25 or more years.
Class C.....	1-55	1-50	30 or more years.

¹ Age requirement for class C pensions: Males, less than 55 years; females, less than 50 years.

Disability pensions may be awarded, in the discretion of the employees' benefit committee, with approval of the president or a designated vice president, for total disability resulting from sickness or injury (other than accidental injury arising out of and in the course of employment by the company), to employees whose term of employment is 15 or more years. Disability benefits awarded as a result of injury in service may be granted irrespective of the length of service.

Service and disability pensions are calculated in accordance with a formula set forth in the plan. This formula provides that an employee shall receive 1 percent of his average annual pay during the 10 years next preceding retirement for each year of his term of employment, with a minimum pension of \$30 per month. At the discretion

¹² The expression "term of employment," as defined in the pension plan, means "period of continuous employment in the service of the (telephone) company, or of the company and one or more associated or allied companies with which agreements have been or shall be made for interchange of benefit obligation . . . , or in the service of any Bell company predecessor of any of the above companies. Service in companies subsidiary to, allied with, or predecessors of an associated or allied company will be considered, in determining 'term of employment,' as service in the associated or allied company, in all cases authorized by appropriate action on the part of the associated or allied company and approved by the committee of the American Telephone & Telegraph Co."

of the committee, however, pensions may be based on the 10 consecutive years of highest pay, and minimum pensions may be less than \$30 per month but not less than 1 percent of the average annual pay during the employee's last 10 years of employment multiplied by the years of continuous employment.

Provision is made in the Bell pension plan that in case benefits become payable to beneficiaries under governmental authority, then only the excess, if any, between the benefits under the plan and the benefits under any such Government plan shall be the amount payable by the company under its plan.

Bell System companies notified their employees in 1936 that no change was contemplated in the pension plan by reason of the Social Security Act of 1935, except that in the event the act remains in effect unchanged until 1942, it is expected that benefits under the plan will be reduced by one-half of the amount payable under the Social Security Act. In effect, the employee will receive from the Bell company and the Government the full Bell pension plus one-half of the social security benefits, which half of the Government benefits received by Bell System employees represents what the employee has contributed toward social security through the deductions from his salary.

Other provisions of the plan.—An employee has no right to be retained in the company's employ by reason of the adoption of the plan; nor does he acquire any claim to any benefits after his discharge, unless benefits accrue prior to his discharge. Prior to the adoption by the companies operating under the plan of resolutions irrevocably devoting the pension fund to pension purposes and prior to the adoption of certain amendments to the plan itself in 1938, it was generally understood that no right to a service pension nor any claim against the pension fund accrued to an employee by reason of employment less than that specified in the plan. The plan itself provided that pensions or disability benefits might be suspended or terminated in the discretion of the committee and the president, with the approval of the board of directors, in cases of conduct prejudicial to the interests of the company. Amendments to the plan adopted in 1938 specifically provide for disposition of the entire amount in the pension fund in the event of termination of the plan and thus it is possible for an employee with a lesser term of service than that required to establish eligibility for a pension to participate in the pension fund in the event the plan is terminated. While no pensioner of the Bell System has ever been deprived of his pension for conduct prejudicial to the interests of the company, the possibility of such suspension or termination of pension payments has been eliminated by an amendment adopted in 1938.

Provision is also made in the plan for the manner in which breaks in service, such as temporary lay-off, leaves of absence, etc., shall be considered in determining the benefits due an employee by reason of the company's adoption of the plan.

The plan also provides that the committee, with consent of the president and approval of the board of directors, may from time to time make changes in the plan, but such changes shall not affect the rights of any employee, without his consent, to any benefit or pension to which he may have become entitled previously under the plan.

The trust agreement.—The modifications of the plan in 1927 and 1928, among other things, made provision for the payment of service

pensions on an accrual basis, the segregation of pension funds from corporate assets, the appointment of a trustee, and the making of a trust agreement under the terms of which the pension fund would be administered.

Under the American Co.'s agreement, the trustee assumed the duty of investing the fund as directed by the American Co., of collecting interest on the fund, and paying service pensions therefrom as instructed by the American Co. The trustee is authorized to make temporary investments of funds for which it receives no instruction to invest by the American Co.

The trustee is relieved of any and all liability, except as to its own negligence and willful misconduct, if it follows the duly authorized instructions of the American Co., in making payments from the fund.

Provision is made for the trustee's resignation upon 60 days' notice, and for removal of the trustee by the company upon like notice. The agreement, which is dated December 31, 1927, is terminable by reason of a trust extension agreement dated December 27, 1937, on the 1st day of January 1962. The agreement may be canceled, and the trust created thereby is revocable at any time by the company upon written notice given by the company to the trustee, to become effective after the expiration of 15 months from the receipt of notice by the trustee. In the event of such cancelation or revocation, the trustee shall deliver to the company, or its designee all moneys and securities in its possession.

Subsequent to the making of the trust agreement, it was agreed by the American Co. and the trustee, the Bankers Trust Co. (as well as other companies having trust agreements with the Bankers Trust Co.), that the American Co. would make payments to its pensioners direct on behalf of the trustee, which acts would discharge the trustee's obligation under the trust agreement as to making service pension payments upon written direction of the company.

Plans of the associated and allied companies.—The American Co.'s plan provides that agreements may be made between it and associated or affiliated companies for the exchange of benefit obligations similar to the American Co.'s plan, and that the general provisions of such agreements shall be:

1. That as long as such agreements remain in force, the plans of the associate or allied companies shall be maintained so as to conform to the American Co.'s plan;
2. That advance provisions for payment of service pensions shall be maintained by the affiliates in amounts necessary to fulfill all requirements of the plans as they may be in effect from time to time;
3. That employee's term of employment as defined in the American Co.'s plan shall include employment by companies having a reciprocal agreement with the American Co.;
4. That in case of consolidation or merger with another company having a similar benefit plan, the pension funds of the companies consolidated or merged shall be combined.

In view of the similarity of these companies' plans to the American Co.'s plan, as hereinabove pointed out, only the American Co.'s plan and trust agreement has been discussed.

In addition to entering into agreements relating to the interchange of benefits, the various companies which have adopted the Bell System pension plan have entered into several other agreements and arrangements relative to the plan. From the standpoint of service pensions, the broad effects of such supplemental agreements are (a)

to extend the benefits of the plan to a large number of employees; (b) to effect a more equitable administration of the plan with respect to employees transferred from one company to another; and (c) to make possible the payment of service pensions to persons who have completed the required term of employment and are otherwise eligible for retirement under the plan.

Administration of the plan.—Under the provisions of the plan, an “employees’ benefit committee,” consisting of five members appointed by the board of directors, administers the plan. The membership of the benefit committees of the Bell companies is composed exclusively of executive officers of the respective companies and their representatives.

The committee’s powers with respect to the plan are those specifically granted it, and such other powers as may be necessary to the administration thereof. The committee determines conclusively for all parties all questions arising in the administration of the plan, and is authorized to make disbursements in accordance with the regulations promulgated under the plan. In the American Co. the detailed functions of the committee are carried out by the benefit and medical department.

The responsibility for the successful administration of the Bell System pension plan rests largely with the American Co., which takes the initiative in formulating changes in the plan, prepares accounting procedures, handles transactions with the trustee of the pension fund, and, through its employees’ benefit committee, renders formal and informal opinions interpreting the plan.

The employees’ benefit committee exercises wide discretionary authority in connection with its administration of the plan. Certain of its acts require executive approval; others do not. For example, the executive committee, with the approval of the president of the company, has the authority to grant pensions referred to as classes B and C and so-called disability pensions.

Operations Under the Plan.

The creation of the Bell System plan in 1913, its later modification in 1927 and 1928, and its present provisions, have been detailed in the preceding discussion. There also it was pointed out that, prior to the modification of 1927, provision for payments of service pensions was made in effect, by charging the payments, when and as made, to operating expenses. After the modification of the plan, provision was made for accruing the ultimate cost of service pensions on an annual basis, and a trust fund was created and segregated from corporate assets.

In this section consideration will be given to the financial operations under the plan, including the investment of the fund, interest earned from investment of the fund, and the unfunded actuarial liability.

The pension fund.—The initial sum transferred to the trustee of the pension fund as of December 31, 1927, represented accruals for pensions during 1927 less payments made during that year to pensioners awarded service pensions after January 1, 1927. There was added to the fund as of June 30, 1928, an amount equal to the balance of the employees’ benefit reserve on that date, together with accruals for the first 6 months of 1928, less pension payments made during the first 6 months of 1928 for pensions awarded after January 1, 1927.

It has been the practice of Bell System companies since June 30, 1928, until about April 1938, to pay to the trustee semiannually,¹³ as of June 30 and December 31, the amounts of the accruals for the preceding 6 months less service-pension payments made to all pensioners for such period. The accounting practice, however, was to add the entire accrual for the period to the fund, and deduct therefrom pension payments made during the period.

This summary discussion will be limited to Bell System companies,¹⁴ although the investigational staff report contains detailed information for other companies.

The employees' benefit reserve for the Bell System companies was initiated by making appropriations from surplus. These initial appropriations aggregated \$8,855,000. During the period the reserve was continued on the companies' books, 1913 to 1928, additions were made thereto in the amount of \$77,242,492, consisting principally of charges to operating expenses in the amount of \$50,504,843, and additional surplus appropriations in the sum of \$26,463,091. During this same period, benefit payments aggregating \$51,255,628, including service-pension payments in the amount of \$4,206,748, were deducted from the reserve. The balance at July 1, 1928, which was transferred to the trustee of the pension fund, was \$34,841,864.

During the years 1927 to 1935, inclusive, there was added to the pension fund a sum of \$135,353,604, of which \$102,053,898 consisted of service-pension accruals charged to operating expenses, and \$32,567,574 represented interest received from investments of the fund. During the same period service-pension payments aggregating \$18,410,630 were charged against the fund. At December 31, 1935, the pension fund of the Bell System companies amounted to \$151,756,289. For the year 1935 accruals for Bell System companies totaled \$11,320,413; and disbursements for pensions to retired employees in the same year were \$4,386,740.

Investment of pension funds.—The trust agreements executed between companies operating under the Bell pension plan and the Bankers Trust Co. authorize such companies to direct the manner of investing their respective pension funds. Such companies are specifically authorized to invest the funds in Bell System secured or unsecured bonds and notes. In general, the American Co. directs the investment of the pension fund for all companies operating under the plan.

During the years 1927 to 1932 it was the practice to invest the entire pension fund of the Bell Telephone Companies in their unsecured promissory notes. When the pension fund was first established in 1927, and for some years thereafter, Bell System companies needed capital to build additional plant. Since the companies viewed the use of the pension fund for plant extensions as an economical means of obtaining needed capital, the trustee was instructed to and did invest

¹³ Changed to monthly basis pursuant to instructions to the trustee dated February 16, 1938.

¹⁴ The following companies are included in the term "Bell System companies": American Telephone & Telegraph Co., New England Telephone & Telegraph Co., the Southern New England Telephone Co., New York Telephone Co., New Jersey Bell Telephone Co., the Bell Telephone Co. of Pennsylvania, the Diamond State Telephone Co., the Chesapeake & Potomac Telephone Co., the Chesapeake & Potomac Telephone Co. of Baltimore City, the Chesapeake & Potomac Telephone Co. of Virginia, the Chesapeake & Potomac Telephone Co. of West Virginia, Southern Bell Telephone & Telegraph Co., the Ohio Bell Telephone Co., the Cincinnati & Suburban Bell Telephone Co., Michigan Bell Telephone Co., Indiana Bell Telephone Co., Wisconsin Telephone Co., Illinois Bell Telephone Co., Northwestern Bell Telephone Co., Southwestern Bell Telephone Co., the Mountain States Telephone Co., the Pacific Telephone & Telegraph Co., Southern California Telephone Co., Bell Telephone Co. of Nevada.

a large portion of the pension funds in the unsecured notes of the Bell System companies.

Examination of the provisional estimates for the associated operating companies for the years 1929 and 1930, and the corresponding sheets for the Bell System for the years 1931 to 1935, inclusive, shows that the pension funds borrowed from the trustee were included in the estimated funds to meet the requirements for construction of plant and other corporate purposes, such as retirement of maturing obligations. In 1935, for the Bell System as a whole, it was estimated that only \$4,025,000 of the pension funds would be needed to cover cash requirements in excess of those covered by funds from other sources. During the period 1929 to 1932, the ways and means statements of the general department of the American Co. show that the pension funds were included in the estimated resources to meet the yearly cash requirements. In the year 1933, and subsequently, the American Co.'s resources, exclusive of pension trust funds, were estimated to be sufficient to meet the company's total financing requirement.

The procedure followed by the various companies in making investments in unsecured notes requires only an outlay of cash equal to the payment of service pensions. At intervals of 6 months, the companies issue to the trustee their notes in the amount of service pension accruals for the preceding 6 months, plus interest on the notes already held by the trustee, less pension payments made during the period. This practice has been approved by the trustee, which, as noted above, made an agreement with such companies to discharge its obligation as to making service payments by this procedure. The amounts owing the pension trustee as of December 31, 1935, by the American Co. and the 23 associated telephone companies, are classified, on the consolidated balance sheet of the System, included as a part of its annual report, as "long-term debt." This practice was initiated in 1928. By endorsement, the American Co. has agreed that the notes of the Bell associated telephone companies given to the trustee of their respective pension funds have precedence as to payment of principal over demand notes held by it from time to time evidencing indebtedness of any of said companies.

The advantages to the Bell System companies in investing the pension funds in companies' unsecured notes were summarized by the chief statistician's division of the American Co. in 1933.¹⁴ The following reasons were set forth: (1) The funding of pension accruals does not involve a greater outlay than is required for actual pension disbursements; (2) there is no loss of interest resulting from delay in the investment and reinvestment of the funds, including interest additions; (3) investment expenses are held to a minimum; (4) the interest rate carried by the notes is subject to control by the company, with the result that the rate assumed in the actuarial computation of accrued charges can be practically assured; (5) the principal of the fund is not subject to investment losses.

It was also further stated that there were certain important considerations which point to the conclusion that the investment of the full amount of the pension fund in company notes cannot appropriately be regarded as a permanent procedure. These considerations were: (1) Distinction should be drawn between matured liability, that is, the amount due employees granted pensions and those eligible

¹⁴ See exhibit 582, appendix 6.

to retire with class A pensions at their own request ¹⁶ and the accrued but not yet matured liability for other employees; (2) doubt that substantial amounts provided by pension accruals and interest will be needed in the business at the time they are available, and, if needed the inclusion on the company balance sheet of so large an item in the form of demand notes would be undesirable; (3) State commissions may question the integrity of the investment.

Commencing in 1933, the Bell System began to invest a part of the pension fund in securities other than unsecured notes of the companies operating under the plan. The greater part of this different type of investment has been in Bell System bonds. The types of investments and the amounts thereof of the pension funds for the Bell System companies at the end of the years 1927 through 1935 are given in the following table.

TABLE 75.—Composition of pension funds of Bell Telephone System, Dec. 31, 1927, to Dec. 31, 1935, inclusive (cost basis)

Year ended Dec. 31—	Total company notes	Bell bonds	United States Government bonds	Accrued interest	Cash
(a)	(b)	(c)	(d)	(e)	(f)
1927.....	\$6,952,198	-----	-----	-----	-----
1928.....	52,667,228	-----	-----	-----	-----
1929.....	66,931,549	-----	-----	-----	-----
1930.....	83,028,295	-----	-----	-----	-----
1931.....	99,923,684	-----	-----	-----	-----
1932.....	113,819,658	-----	-----	-----	-----
1933.....	113,572,980	\$9,298,468	\$2,761,312	\$108,182	\$957,537
1934.....	117,562,290	16,629,117	2,761,312	38,875	2,111,234
1935.....	125,438,038	22,559,976	2,179,035	9,871	1,569,370

Source: Exhibit 582, table 8, p. 16.

Instructions issued to the trustee, effective February 16, 1938, modified the procedure theretofore followed in several important particulars, principally the following: (1) The trustee was authorized and instructed, until directed otherwise, to invest the pension funds in any securities considered legal investments for life-insurance companies under the insurance law of the State of New York; (2) the companies are to remit to the trustee monthly cash payments equal to the amount of service pension accruals; (3) the companies were also to remit to the trustee monthly payments in cash equal to the amount of current pension disbursements, which monthly payments were to consist of (a) interest on all 4 percent unsecured notes of the companies held by the trustee and (b) payments on the principal of said notes in such amount as will, together with the amounts in (a) above, produce the required total; (4) the companies reserve the right to make additional payments, either in part or in full on the principal of the 4 percent unsecured notes held by the trustee.

It will be seen that under the modified instructions, the unsecured notes of the Bell System company will gradually be eliminated from the trust funds and there will be substituted securities eligible for investment by life insurance companies in New York. The trustee is also given blanket instructions with respect to investment of the

¹⁶ The memorandum provides that funds for this purpose "should be invested in securities representing the highest degree of safety consistent with reasonable rate of yield," and in such form as not to be "seriously questioned by either retired employees or by governmental bodies."

funds. These are important in establishing the true nature of the pension funds as trust funds and the true capacity of the Bankers Trust Co. as trustee for the beneficiary under the pension plan. These instructions and the procedure thus established do not constitute a change in or modification of the trust agreement, or of the pension plan and the modified instructions and procedures are thus still subject to further modification within the terms of the trust agreements and the pension plan.

Interest derived from pension fund.—The Bell System accrual method of making provisions for a fund to meet service pensions contemplates that the balance of the amounts annually paid into the fund will draw interest. The interest rate assumed in making actuarial determinations of the sum that should be set aside each year under the Bell plan was 4 percent.

As has been pointed out above, the control Bell System companies exercise in investing the pension fund, particularly investments in unsecured demand company notes, makes possible the Bell System's determining the rate of interest that shall be paid on the pension fund.

During the period from December 1927 to March 31, 1932, an interest rate of 5½ percent was paid to the trustee on the pension funds borrowed by the Bell System companies. On the latter date the interest rate was reduced to 4 percent. As of December 31, 1935, a small portion of the pension fund was invested in seven issues of Bell System bonds. The coupon rate on five of these issues was 5 percent. On the other two issues the coupon rates were 4½ percent and 3½ percent, respectively. A smaller portion of the fund was invested in United States Government bonds, the interest on which was 4½ percent. During the period from December 1927 to December 31, 1935, inclusive, interest received by the pension fund from investment in company notes aggregated \$31,093,241. The interest received by the pension fund from bond investments during the years 1933–35, inclusive, was \$1,474,333.

Accrued and unfunded actuarial pension liability.—There is now pending before this Commission a proceeding (Docket 5188) initiated by certain Bell System companies, but related to findings in the proposed report of the telephone investigation, in which they seek to increase the so-called normal accruals on the full-service basis by an amount necessary to arrest the growth of the unfunded actuarial liability, which amount is, of course, equal to 4 percent of such unfunded actuarial liability. This topic is accordingly left undeveloped in this report with the intention of furnishing the Congress and all distributees of this report with a copy of the Commission's report in Docket No. 5188, when available.

Employee benefits.—Bell Telephone System companies service pension payments for the years 1913 to 1935, inclusive, aggregated \$22,617,378. Of this amount, \$18,410,630 has been paid from the pension fund. The remainder, or \$4,206,748, was represented by charges to operating expense in the year the payments were made.

From the inception of the Bell pension plan on January 1, 1913, until December 31, 1934, the American Co. and the Associated Bell Telephone companies awarded service pensions to 6,005 employees, of whom 4,529 were male and 1,476 were female employees.¹⁷ At

¹⁷ Figures for 1935 were not available at the time the preparation of exhibit 136 was undertaken.

December 31, 1934, there were 3,645 male pensioners and 1,314 female pensioners; the number of male pensioners was 36.5 per thousand active employees. At the same date, the number of female pensioners was 8.8 per thousand active employees.

Provision is made in the Bell System pension plan for a minimum pension of \$30 a month in the case of any full-time employee with 20 or more years of service. The minimum pension may be less, in the discretion of the committee, for employees with less than 20 years service or who have been employed on a part-time basis. The terms of the plan did not, however, limit the maximum amount which may be payable as a pension thereunder.

(1) *Executive benefits.*—Terms of employment of pensioned executives of the American Co., at December 31, 1934, averaged 41 years, and terms of employment of the New York Co.'s pensioned executives averaged 38 years. Terms of employment of assistants to operating officials, engineers, and supervisory foremen in the long lines department of the American Co. averaged from 36 to 39 years, while terms of employment of other employees in this department were from 31 to 32 years. A study made by the American Co. shows that the average wage of the male plant employee increases but little after the tenth year of service, while, on the other hand, wages of nonplant employees show a continuous increase until the fiftieth year of service.

Of 4,959 pensioners on the pension rolls of Bell Telephone System companies, at December 31, 1934, 33, or 0.7 percent of the total number, received 8.5 percent of the total pension payments. These 33 averaged \$903 per month; 2,594 averaged \$92 per month; 2,300 averaged \$36 per month; and 32 (part-time employees) received less than \$30 per month. The general department of the American Co. paid \$1,985,654 to 118 pensioners during the years 1913 to 1934, inclusive. Ten executives received \$931,209, or 47 percent of the total. At December 31, 1934, there were 89 pensioners on the pension roll of the general department. Nine of these pensioners received an average of \$1,050 per month each, and received monthly pensions equal to 42.6 percent of the total payments being made by the general department. These 9 pensioners received 23 percent of the pension payments made by the general and long lines departments of the American Co. The other 334 pensioners on the American Co. rolls received 77 percent of the pension payments made by the company.

In July 1934, the American Co. estimated that the present worth of future pension payments in excess of \$3,600 per annum, as of January 1, 1934, was \$21,000,000, for which provision to the extent of \$6,114,000 had been made and for which there was an unfunded actuarial liability of \$15,711,000. At the same date it was estimated that the sum of \$1,750,000 applied to existing pensions and the balance applied to future pensions. An estimate was also made of the reduction in annual charges that would result if pensions were limited to \$3,600 annually. In such event, the Bell System accrual rate for 1933 would have been reduced from 2.76 percent of the pay roll to 2.62 percent, and would have resulted in a reduction of \$580,000 annually.

A maximum pension of \$1,440 per annum¹⁸ would have affected only 449 out of the total of 4,959 pensioners on the pension rolls at December 31, 1934, or less than 10 percent. An employee with 30

¹⁸ The maximum pension payable under the Railroad Retirement Act of 1935.

years' service would have to receive a salary over a period of 10 years averaging \$4,800 per year, to be entitled to a pension of \$1,440 per annum.

(2) *Employees' rights to service pensions.*—Prior to the time an employee becomes eligible to retire, he is given no assurance that he will be retained in the employment of the company. The plan specifically provides that he acquires no such right. Nor has the employee any assurance that the plan will be continued by the company, as the company reserves the right to terminate the plan at any time.

Likewise, such an employee has no assurance that the terms of the plan in effect when he enters the company's employ, or at a later time, will remain unchanged until he acquires eligibility for a service pension. The company reserves the right to change the plan at any time, but such change shall not affect the rights of any employee, without his consent, to any pension to which he has previously become entitled under the plan. The possibility of changes in the plan by the company materially affecting the status of certain groups of employees with respect to eligibility for benefits may be illustrated by the change in the automatic retirement rule which became effective in 1930.

On June 4, 1913, the executive committee of the company adopted a resolution providing that on January 1, 1914, every officer or employee of the company who was at that time 70 years of age or more should be retired, and that thereafter every officer or employee becoming 70 years of age should be retired at the end of the month in which he reached such age. This resolution was rescinded on August 18, 1925, and a new rule was adopted calling for automatic retirement at the age of 65, effective July 1, 1930. An employee in 1930 whose term of service at that time was more than 15 years, and who was then 65 years of age, would have been able to complete his 20 years of service prior to the attainment of 70 years, and would have then been entitled to a class A pension.

There were 572 employees not eligible for service pensions who were retired under the 65-year-retirement rule during the period July 1, 1930, to December 31, 1934. Out of 572 employees mentioned, it appears that only 29 could have qualified for a pension under the retirement rule in effect prior to July 1, 1930. The benefits granted to those who were retired during the period ranged all the way from allowances of a few weeks to the granting of special pensions which continued from 1930 through 1934.

Treatment accorded employees retired under the 65-year retirement is illustrated by cases arising under the plans of the Illinois Bell Telephone Co. and the Pacific Telephone & Telegraph Co., chosen from 29 cases set forth in exhibit 136. For instance, 2 employees who lacked 10 and 13 days, respectively, of having 20 years' service were granted service pensions by the employees' benefit committee of the Illinois Bell Telephone Co. Later, these pensions were rescinded because the American Co. advised the Illinois Co. that the 2 employees should have a full 20 years of service to qualify for service pensions, and that 19 years, 11 months, and 20 days, and 19 years, 11 months, and 17 days were not sufficiently long periods. After the pensions had been rescinded, special pensions, which may be rescinded at any time, were granted these 2 employees.

The Pacific Telephone & Telegraph Co. discontinued two special pensions of employees retired in 1930. These two pensioners had a

service record of 19 years, and 19 years and 4 months, respectively, yet their special pensions were discontinued after 3 years and 11 months, and 1 year, respectively.

Further, the plan provides that pension benefits shall be reduced by the amount payable under any governmental pension plan. The changes in pension benefits by reason of Social Security have been described above.

When employees fulfill the requirements of eligibility to be retired under class A pensions, the plan provides that the "employees may, at their own request, or at the discretion of the committee, be retired from active service and become eligible to pensions." It appears to be the intent of this language to provide for alternate methods of retirement: (1) At the employees' own request, or (2) at the discretion of the committee. In considering the plan as a whole, it is apparent that the company makes an offer to its employees of a unilateral contract, which becomes binding upon the company when and only when an employee complies with the terms and conditions of the offer. Employees who have fulfilled the requirements for class A of the pension plan have a legal enforceable right against the company for the pension provided in the plan.¹⁹

Retirement of employees under class B or C pensions is entirely within the discretion of the employees' benefit committee, with the approval of the president or vice president; hence, an employee who becomes eligible for a class B or class C pension acquires no contractual enforceable rights until there is an award of one of these classes of pensions. When the committee exercises its discretion to award a class B or class C pension, and the approval of the president or vice president is obtained and the award made, it is clearly the intent of the plan that the pension so granted shall continue from date of retirement to the death of the pensioner, and that the pensioner shall have a right to the pension fund.

There has been for many years considerable discussion as to the true nature of the cost of payments made for pensions under the Bell plan. The company has upon occasions contended that the amounts ultimately disbursed for pensions were a part of the wages of the employee during the years when he was in service. In other words, the pension payments when made were merely deferred wages of the employee related to the years when he was in active service. At other times, other officials of the Bell System have contended that the total cost of paying pensions is a cost of doing business which cannot be avoided and which cannot be related to the compensation of the employees ultimately qualifying for pensions while these employees were in service. Either approach adopted by the Bell Co. eliminates the possibility that the pension, when paid, may be considered in the light of a mere gratuity granted or denied at the option of the company.

Bell System companies benefits and obligations.—The extent to which the Bell System pension plan has solved the problems of superannuation of their employees, the degree to which it has promoted high morale among Bell System employees, and the contributions it has made to efficient operation of the companies are factors that cannot fully be evaluated by a factual investigation. Bell System

¹⁹ *Schofield v. Zion's Co-op. Merchantile Inst.*, 39 Pac. 2, 342, 96, A. L. R. 1063.

companies maintain that the pension plan has satisfactorily and efficiently met these problems.

It can be observed, however, that the pension fund has been a source of capital for Bell System companies. While this source of capital is very small in comparison with total capital requirements, the investment of the fund and the earnings therefrom are very important considerations in effectuating the purposes of the plan and in seeing that telephone subscribers receive equitable treatment.

(1) *Earnings of the pension fund.*—On December 21, 1927, the date of the adoption by the American Co. of the resolution providing for the accrual method of meeting service pension payments, the American Co. suggested to the associated companies a procedure for investing their pension funds in company notes. The recommended procedure was adopted. Since that date, the funds borrowed from the trustee on unsecured notes have been available to the companies for corporate purposes, and the borrowings of operating telephone companies from the fund have, in one form or another, earned revenues on these borrowings.²⁰ Interest payments to the trustee on these borrowings, as has been pointed out above, were 5½ percent until March 31, 1932, when the rate was changed to 4 percent.

Prior to October 1, 1936, associated companies paid interest at the rate of 6 percent per annum on advances made to them by the American Co. As compared with this rate, borrowings from the pension fund afforded a cheaper source of money than the borrowings from the American Co. Since October 1, 1936, this differential has been reduced somewhat by the reduction of the interest rate on American Co. notes from 6 to 5 percent.

The assumption of a 4-percent interest rate for making actuarial computations over long periods may be reasonable. Failure to credit the pension fund with the actual earnings realized on the telephone assets, by which the investment is represented is a matter that should be considered in fixing telephone rates, particularly when consideration is given to the fact that telephone subscribers have supplied the accruals to the fund and the manner of borrowing from the fund on

²⁰The Wisconsin Public Service Commission, in considering the pension plan of the Wisconsin Telephone Co., which is practically identical with the plans of other Bell System companies, reached the conclusion that the pension funds of that company were invested "preponderantly, if not wholly, in the telephone plant": "... the cash received through revenues to cover pensions' expense is retained in the business and is invested preponderantly, if not wholly, in the telephone plant. Consequently, although the fund held by the pension trustee is comprised of the notes of the company, looking through the form to the substance of the transaction the fund exists, from the standpoint of the company, in its fixed capital." (*Re Wisconsin Telephone Co.*, P. U. R. (N. S.) 224.)

unsecured notes makes possible pension accruals without cash outlay except the amount necessary to meet pension payments.²¹

(2) *Dedication of the pension fund to pension purposes.*—As has been pointed out in a preceding section, the Bell System companies' legal obligation to pay service pensions include the payment to persons awarded service pensions and to those entitled to retire at their own request. The matured obligation for the Bell System companies, on December 31, 1936, amounted to \$71,744,020, whereas the pension fund for these companies on that date totaled \$165,775,289.²²

The difference between these two amounts, considered in connection with the obligations under the plan, suggested certain queries, during the course of the telephone investigation, in the event (a) the pension plan is canceled, and thereafter employees cannot qualify for service pensions, and (b) the trust agreements with the Bankers Trust Co. are canceled.

The legal sufficiency of the trust commitment to preserve the trust nature of the pension fund and to prevent the assets in the fund from becoming general corporate assets in the event of the termination of the pension plan or revocation of the trust agreement, was questioned by the Wisconsin Public Service Commission in 1932.²³ A similar criticism was implied by an examiner in the preliminary report on communications companies, submitted to the House Committee on Interstate and Foreign Commerce on April 18, 1934.²⁴

²¹ The Wisconsin Public Service Commission, in 1936, in considering the difference between the interest paid by the Wisconsin Telephone Co. on borrowings from the pension fund and the earnings on the investment thereof in telephone plant, decided that the telephone subscriber should be accorded the benefit of this difference:

"It may be that a 4-percent interest rate is as high as should be used in the actuarial formulae determining the rate of pension accruals. The rate is determined actuarially by consideration of expected experience from the date that an employee enters the service until he may be subject to pension. This covers a considerable number of years. Under such conditions a revision upward in the actuarial rate of interest will materially affect the rate of pension accruals. In fact, if a higher rate is used, for example 5.5 percent, the accruals will be so reduced that a failure to earn the interest assumed in the formula, even for comparatively short periods, might seriously affect the ultimate adequacy of the pension fund.

"Although 4 percent may be an adequate interest rate for the actuarial computations, it appears only equitable for rate-making purposes to consider the actual earnings on the investment in telephone plant which is made by reason of the pension accruals. The pension accruals are charged to operating expenses in the company's accounts. The rate of accrual is based upon a 4-percent actuarial computation. Although 4-percent notes are issued to the trustee (although no cash transaction is involved), the fact is that the amount of the accruals plus the compound interest thereon is invested in the plant of the company. Thus a situation is created where the subscribers are charged with amounts based upon an interest earning of 4 percent whereas the plant in which the fund is invested has earned at an average rate of more than 6 percent for many years in the past.

"The commission is of the opinion that the subscribers of the company, having paid the amount of the pension accruals to the company through rates for telephone service, should be given the benefit of earnings on the fund in excess of the stated rate used in the actuarial formula.

"... (the) excess interest earning should be credited to the pension accrual expense for rate-making purposes in order that the subscribers may receive full credit for the interest on the pension accruals which they pay in telephone rates.

"This treatment of earnings on the pension fund in excess of the stated rate of interest used in the actuarial formula is analogous to the treatment of dividends received on life-insurance policies. Premiums are paid for life insurance. The amount of premium is usually determined based on actuarial formulae involving the use of a 3-percent interest factor. The investments of the insurance company may earn more than the rate used in the actuarial formula. In the case of participating policies, this excess earning, or a portion thereof, is returned to the policyholder as a dividend.

"Accruals are made for pensions (analogous to the insurance premiums) based on actuarial formulae involving a 4-percent interest factor (analogous to the 3-percent rate used generally by insurance companies) and the accumulated accruals plus compound interest are, in effect, invested in telephone plant (analogous to the insurance company's investments). The telephone plant earns more than the 4-percent interest used in computing the pension accruals and, for rate purposes, the excess earnings (analogous to dividends on insurance policies) should be credited against the pension accruals in order that the subscribers who pay the accruals through telephone rates should receive the benefit thereof and be charged with only the net cost of pensions." (*Re Wisconsin Telephone Co.*, 13 P. U. R. (N. S.) 224.)

²² Schedule 13, sheet 9, exhibit 581, extended to include the year 1936.

²³ *Re Wisconsin Telephone Co.*, P. U. R. 1932D, 173, wherein the Commission said: "This 'trust' is patently stamped as revocable at the whim of the donor, the telephone company." "This agreement (the trust agreement) creates neither a specific fund nor a trust of any value to employees."

²⁴ H. Rept. No. 1273, Preliminary Report on Communication Companies, 73d Cong., 2d sess., exhibit No. 1, p. xxxii.

Following this criticism, the pension plans were revised by the companies undertaking, in the event of the termination of the plan or the revocation or other termination of the trust agreement, "to preserve the integrity of the pension fund as a trust fund to be applied solely to service-pension purposes, and to take such action as may be necessary or appropriate to insure the application of the entire fund to such purposes."

This revision was made effective by resolutions of the boards of directors of the companies having pension plans, dated August 15, 1934, which contained the following proviso:

* * * it is and has always been the intent of this company that the trust fund known as the pension fund * * * be irrevocably devoted to service-pension purposes, and that no part thereof shall constitute assets of the company or revert to the company in case of the termination of said plan or any trust agreement made pursuant thereto; * * *

Effective September 1, 1938, the plan was amended to provide specifically for the disposition of all amounts in the pension fund in the event the plan might be terminated. The plan and the resolutions of the boards of directors with reference thereto, before the amendment of September 1, 1938, provided that the funds should be irrevocably devoted to pension purposes, but did not designate the disposition of the fund in excess of the amount necessary to meet the matured liability. Thus there might still have been grounds for criticism, since there was a possible construction of the phrase "pension purposes" in the resolutions and in the plan, that the payments might be limited to those made to persons who were on the pension roll and to the employees entitled to a pension at their own request at the termination date, in case the plan were terminated.

Summary.

The payment of service pensions to retired employees was first placed on a systematic basis by the Bell System companies in 1913. The plan established at that time was operated on a disbursement or "pay-as-you-go" basis until January 1, 1927, when an accrual basis was adopted. Later in that year, a trustee was appointed to administer the pension fund accumulated by periodic accruals and interest accretions. In 1928 the accrual method was changed from the 15-year basis to the full service accrual basis. The total cost of paying pensions chargeable as operating expenses under existing accounting rules under any proposed accrual and funding basis is less than on the "pay-as-you-go" basis due to the fact that actual disbursements under the latter basis are represented in part by interest earnings on the fund accumulated in advance. Under trust agreements with the trustee, Bell System companies have retained the entire control over investments of the pension fund; and in the exercise of that control, they have invested practically the whole fund in Bell System obligations by directing the trustee to purchase such obligations, the great majority of which are unsecured demand notes. Amended but revocable instructions to the trustee, effective February 16, 1938, provide generally for gradual elimination of Bell System companies' unsecured notes from the trust funds and substitution of securities eligible for investment by life-insurance companies in New York.

Pension accruals for the years 1927-35 totaled \$102,053,898; pension payments during this period from the fund aggregated \$18,410,630. The balance in the fund as of December 31, 1935, was

\$151,756,289. Principally because there existed at the time the accrual method was initiated an unfunded actuarial liability, due to the fact that insufficient provisions had been made prior to the adoption of the full service accrual method to meet service pensions for employees then in service, and interest accretions have been deficient on account of such liability, there existed as of December 31, 1936, an unfunded actuarial liability of \$187,141,022, according to the American Co.'s computations. This deficiency, as of the last-mentioned date, reflected a material reduction because of a contemplated lowering of the amount of benefits payable by the company beginning in 1942 on account of benefits then payable under the Social Security Act.

Under the plan three types of service pensions are awarded. Eligibility for retirement is dependent upon employees attaining a specified age and completing a specified term of employment. Only as to class A pensions, for which eligibility of males depends upon attaining the age of 60 years (females, 55 years) and completing a 20-year term of employment, may employees be retired at their own request. Employees may retire on class B and class C pensions only at the discretion of the employees' benefit committee. Each company maintains an employees' benefit committee to administer the plan, which is composed of company executives and their assistants. In general, annual pensions are determined on the basis of a percentage (1 percent for each year of employment) of the average annual salary during the last 10 years of employment. In this calculation the annual average of the 10 consecutive years of highest pay may be substituted for the average annual salary for the last 10 years, in the discretion of the employees' benefit committee, subject to executive approval.

CHAPTER 17

PUBLIC RELATIONS

The public relations policies of the Bell System have been developed for the purpose of protecting its investment and maintaining the profit opportunity presented by the communications field. The stated policy of the system is to give the best possible service at the least possible cost consistent with financial safety. Cultivation of public confidence is sponsored to diminish public criticism and thus increase the social, economic, and political stability of the Bell System. The system's public relations policies are based upon a long-range cultivation of public opinion through various means.

The keen competitive warfare which followed the expiration of the basic Bell patents impressed upon the Bell management the necessity for friendly public relations. As a result the Bell System's policies underwent a change. This was first evidenced around 1907, in the system's attitude toward independents. The former policies of refusal to connect and refusal to sell Bell equipment to independents were reversed. During this period the management turned to improvement in service, in personnel, and in personnel attitude.

By 1910, competition had been eliminated insofar as it threatened seriously the profits of the system. The Bell management was sufficiently far-sighted to realize that a Nation-wide telephone monopoly could not be achieved in the absence of competition as insurance against extortion unless some degree of public regulation were provided. The annual reports of the American Co. for the years 1908, 1911, and 1912, indicate an acceptance of public regulation as a substitute for effective competition. The hope was expressed that the State regulatory commissions would adopt the judicial attitude, would be permanent, and therefore less susceptible to public pressure.

It was during this period, 1910-13, that the new management under Theodore N. Vail embarked upon the policy of educating the public in the advantages of telephony as developed by the Bell System. The policy of humanizing a vast corporation was begun and still continues. It has been clothed with a service ideology. The vast resources of a Nation-wide business were recruited in the task.

Today the Bell System's aim of protecting its investment in the communications field, and maintaining and increasing its revenues, makes itself felt in the field of public relations through a policy utilizing three primary means: indoctrination, economic contacts and political activities.¹ Bell System public relations will be discussed under these three broad groupings.

Indoctrination.

The educational campaign to sell the Bell System to the public has been based upon a vast program of propaganda directed to the dissemination, among diverse groups, of the idea that the organization

¹ Bell System public relations policies and practices are summarized in exhibit 2096-E, pp. 1-192.

of the Bell System gives the most efficient and inexpensive telephone service in the world. The channels through which this program has been carried on are summarized briefly herein.

Employee relations with the public.—The employees of the Bell System represent a cross-section of the entire social strata. Not only through courtesy and efficiency in handling their relations with the public during office hours, but in social contacts outside the office, this large group carries on a campaign of good will and education of the general public to the merits of the Bell System. Next to the Federal Government the Bell System is the largest single employer of labor in the United States. In 1929, at the peak of employment, there were approximately 450,000 employees in all the Bell controlled companies. As of December 31, 1936, Bell System employees numbered approximately 300,000. These employees are spread throughout the United States, reaching into all of the large cities and most of the counties. They receive special instruction in methods of contacting the public.

In addition to the individual efforts of the employees to promote good will, publicity and public relations problems of the Bell System are concentrated in an information or public relations department in each company. The functions of such departments are substantially the same. The information department of each company is headed by a person ranking high in importance among the officials of the company. Usually he is a vice president or assistant to the president. Most of these men are "career men" in the telephone business. Some have had experience outside of the telephone field, usually in the newspaper or publicity field. Many are former newspaper reporters, editors, and publishers. It is the function of each information department to act as spokesman for the executive departments of the company, either through the written word, motion pictures, advertisements, or through any other means by which the company speaks to the public. It also endeavors to ascertain the public's point of view and to act as an interpreter of the public to the company. Such departments prepare advertising, read proofs, and attend to the physical duties in connection with advertising campaigns. The officer in charge consults frequently with the commercial manager of the company and with division commercial managers.

The publicity department serves in an advisory capacity to all other departments, its facilities being used to solve any problem of those departments in which relations with the public are involved. Such departments prepare news releases and stories for the use of commercial departments and for circulation among employees, stockholders, subscribers, and newspaper editors. Publicity conferences are held under the auspices of the American Co. once or twice a year. At such conferences problems common to all companies are discussed.

The information or public-relations departments are not the only organizations that engage in long-range cultivation of public opinion. The commercial departments of the various operating companies of the Bell System are important vehicles in public relations. They come into daily contact with the public and have an opportunity of visiting people on operating matters and sales efforts. Public relations are a major item in the commercial programs of Bell operating companies.

The legal departments of the Bell operating companies are also active in public relations, particularly with respect to specific objectives, such as proposed legislation or prosecution of cases before courts and commissions.

*Noncommercial contacts.*²—Bell companies encourage their employees to become members of business, social, scientific, and professional societies and athletic clubs, because such organizations afford contacts with the leaders in general public activities and with those molding public sentiment. Usually this is accomplished upon the initiative of the Bell companies, which pay the membership fees. Business clubs in which memberships are purchased include credit and merchants' associations, Lions, Kiwanis, and Rotary clubs, and chambers of commerce, to mention a few. Professional and scientific societies include bar associations, medical associations, American Public Health Association, American Statistical Association, etc.

During the year 1934, Bell Telephone companies and the Western Electric Co. paid dues and contributions, amounting to \$473,683, to 5,178 noncommercial organizations for 7,960 memberships. During the 10-year period, 1925-34, inclusive, total dues paid by Bell System companies for memberships in such organizations amounted to \$4,848,048. Of this sum, \$3,972,348 was charged to operating expenses. In some organizations the Bell companies have a large delegation. In 1934, they held 108 memberships in the United States Chamber of Commerce for which they paid \$18,725 in dues and contributions. During the 10-year period, 1925-34, inclusive, \$180,187 was paid to this one organization. In addition to membership dues and contributions to these organizations, some Bell companies invested money in the stock or mortgages of social, athletic, and civic associations. Frequently these investments are written down to \$1 on the books.

Publications and authors.—In furthering the program in developing favorable public opinion, the Bell System has made use of newspapers, news services, magazines, and books.

Investigation disclosed intimate contact between Bell System companies and two labor newspapers, the Union, of Indianapolis, Ind., and Work, of Columbus, Ohio. The American Co., in 1918, bought 45,400 copies of a pamphlet, at \$25 per thousand, reprinted from a series of articles appearing in the Union on the subject, *How About Conserving the Public Utilities?* The American Co. supplied the mailing list for distribution of the pamphlets. In 1919 the American Co. bought 10,000 copies of each of two articles appearing in the same organ, entitled, "American Labor Must Destroy Bolshevism," and "Adequate 'Phone Rates' Must be Provided." The American Co. paid \$12.50 per thousand for copies of this latter article in pamphlet form. During the 7-year period, 1918-24, inclusive, the American Co. subscribed for articles appearing in the Union to be reprinted and distributed in pamphlet form. The articles, in general, were relative to utility and telephone interests and covered labor, political, and legislative subjects.

Contributions were made to the labor newspaper Work, located at Columbus, Ohio, by the Ohio Bell Telephone Co. during the period 1924-28, inclusive, and in 1931, but no copy was run in the publication during the years 1927, 1928, and 1931 for the Ohio Bell.

² For detailed discussion see exhibit 228, chapter II, pp. 27-38

The Bell System had secured favorable and widely circulated publicity through certain news services, particularly the Hofer Service issued by E. Hofer & Sons. This service was formerly one of the best-known avenues for distribution of propaganda by public utilities and was widely used by them. It was referred to frequently in the Federal Trade Commission's report on the propagandists' activities of the electric and gas associations. The American Co.'s connection with the Hofer Service was actively maintained during the period 1918-25, inclusive. At the present time no relations exist between the American Co. and the Hofer Service. The Hofer Service was a syndicated news service, published as a news sheet, giving news and editorial comments which were sent to newspapers throughout the country, particularly throughout the Northwest. The service was conducted without charge to the papers for the articles received. The news articles and publicity issued by the Hofer Service for the Bell System were frequently written, and always distributed, at the instance of Bell companies. A total of \$102,306.76 was paid by the Bell System to the Hofer Service during the period 1915-31. Most of the payments were made during the period 1923-28. Payments were usually made monthly, each payment approximating \$1,200. The purpose of the payment, designated by Bell companies, was a subscription to industrial development campaign, including a proportionate share of the subscription price of *The Manufacturer* sent to newspapers. Through this service publicity favorable to the Bell System was introduced to many newspapers in the United States. The number of newspapers receiving this service at one time (November 5, 1924) totaled 14,000.

The Bell System was also one of the underwriters of *Public Utilities Reports*, a publication comprising reports of State utilities commissions and court decisions, and *Public Utilities Fortnightly*, a publication of matters of interest in the utility field. *Public Utilities Reports* was underwritten by a group of utility companies and other users, such underwriting being secured by the utilities publication committee, composed of certain persons designated by utility interests. Certain utilities and other users agreed to underwrite pro rata shares of any annual deficit on *Public Utilities Reports*, the maximum obligation of any such shares being limited by a stated annual subscription, renewable at 5-year intervals from January 1, 1915, and such subscriptions coming within the terms of a trust agreement with the Bankers Trust Co. of New York as trustee. The board of directors of *Public Utilities Reports, Inc.*, annually presented the financial needs of *Public Utilities Reports* to the utilities publication committee, which in turn authorized the trustee to issue a call upon the underwriters for their pro rata shares of any deficit on that publication. Headquarters of the committee were in the Munsey Building in Washington, D. C. During the period 1916-28, the American Co., under the agreement, paid a total of \$15,150. A similar underwriting agreement was continued by the American Co. for 5 years from January 1, 1930, under which \$10,000 was the stated maximum subscription against which pro rata calls could be made. Instead of direct subsidization of this amount, however, the American Co. agreed to take subscriptions amounting to that sum. During the period 1931-34, inclusive, the Bell System held 533 subscriptions to *Public Utilities Fortnightly* and 47 subscriptions to *Public Utilities Reports*.

The above order resulted in an annual expense to the American Co. of \$9,992.50. In 1935, the number of subscriptions was reduced to 435 copies of the Public Utilities Fortnightly and 38 copies of the Public Utilities Reports, for which the American Co. paid \$9,113.75. In 1936, the subscriptions were further reduced to 429 copies of the Public Utilities Fortnightly and 40 copies of the Public Utilities Reports, the American Co. paying therefor the sum of \$8,235.

Three books which may properly be described as propaganda for the Bell System have been prepared and published under the auspices of the American Co. In each case the author of the book was paid by the American Co. for its preparation and the company secured a publisher for the volume after it was written. In no case did the connection of the American Co. with the volumes appear in the books themselves.

The three subsidized books are: *History of the Telephone*, by Herbert N. Casson, published by A. C. McClurg & Co. (Chicago) in 1910; *Government Telephones*, by James A. Mavor, published by Moffat, Yard & Co. (New York) in 1916; and *The Telephone Idea*, by Arthur Pound, published by Greenberg, Publisher, Inc. (New York), in 1926.

The *History of the Telephone*, written by Casson, is a story of the original invention of the telephone with emphasis on the early struggle of Alexander Graham Bell, including the patent litigation and explanation of telephone problems, and a comparison of the Bell Telephone System with those in foreign countries, closing with a denunciation of Government ownership. The author was formerly an editor on the staff of the *New York World* and later on *Munsey's Magazine*. At the time of the preparation of the volume he was engaged as a lecturer and independent writer. A total of \$8,414 was paid to Casson by the American Co. The distribution of the volume was arranged through the publishers, A. C. McClurg & Co. There was no indication given to the people receiving the book, whether a reviewer or a library, that it had been prepared for or distributed by the American Co. Thus, to an outsider the book would seem to have been written in the usual fashion by a free lance journalist who had arranged with McClurg & Co. as publishers to distribute it. By the end of 1910, more than 10,000 copies of the book had been distributed to libraries, technical and popular journals, reviewers, etc.³

Government Telephones, by Mavor, contains a discussion of Government ownership and operation of the telephone system in Manitoba, Canada. It condemns Government ownership of utilities. The author was professor of political science at the University of Toronto, was a prominent economist in Canada, and had made several studies of Government ownership of utilities. A total of \$2,050 was paid Mavor by the American Co. The connection of the American Co. with the preparation and publication of the book is not shown in the volume. But that company apparently handled the publication and distribution of the copies. The book was distributed to reviewers, to the public, and to selected libraries.

Pound's *The Telephone Idea* sets out the history of the telephone invention and sketches its development and present social importance, with occasional reference to the quality of management of the American Co., the diversity and number of its stockholders, etc. The author has served as editor and contributor to prominent newspapers

³ Since 1910, the book has been reprinted at least once. The book sold for \$1.50 a copy.

in the United States. At the time he was commissioned to write *The Telephone Idea*, he was serving as editor of the *Atlantic Monthly* Press and associate editor of the *Independent*. A total of \$2,385.12 was paid Pound by the American Co. The first two publishers approached, the Macmillan Co. of New York City and Payson & Clark Ltd., of New York City, declined to publish the book on the ground that it constituted propaganda. One thousand copies of a special de luxe edition and 10,000 copies of a regular edition were eventually printed by Greenberg, Publisher, Inc. By December 1934, 9,000 volumes of the regular edition of 10,000 and 550 volumes of the de luxe edition had been distributed.

Relations with educational institutions.—The connection of Bell System officers and directors with colleges and universities is quite extensive. As of November 1, 1935, executive officers and directors of the Bell System held responsible and controlling positions in the councils of 69 universities and colleges in the United States, including most of the well-known major institutions. In 14 of these 69 institutions, there were at least 2 Bell representatives. At that time, 3 of the trustees of George Washington University were directors of the Chesapeake & Potomac Telephone Co.; 4 members of the corporation of the Massachusetts Institute of Technology were officers or directors of various Bell companies; 3 officials, including the general counsel of the Illinois Bell, were trustees of Northwestern University; 3 directors of Bell System companies occupied the positions of chairman of the board of trustees, life trustee, and member of the executive committee of Princeton University; 3 directors of Southwestern Bell were directors of Washington University of St. Louis, 1 of them occupying, in addition, the position of first vice president, and chairman of the executive committee of the university; 3 directors of the Ohio Bell Telephone Co. were trustees of Western Reserve University. The most significant contacts of the Bell System are with Harvard University. There are 10 officers and directors of Bell telephone companies holding various positions in that university. Three of them are overseers and 1 a fellow of Harvard College.

In 1924 the general committee of the American Co., including representatives of the personnel department, operating and engineering department, development and research department, and the engineering department of Western, formulated a program to present telephone apparatus and equipment to educational institutions. It was planned to spend \$250,000 as gross initial outlay with an annual outlay of \$50,000 for maintenance. No substantial part of the contemplated outlay for maintenance was ever actually disbursed. The gifts were to go primarily to schools of the highest types which furnished most of the recruits for the Bell System. It was thought that such gifts would aid materially the associated companies in strengthening their relations with the educational institutions located in their respective territories.

Lectures and demonstrations are given frequently in colleges and secondary schools. In 1934, for example, Southwestern Bell Telephone Co. employees gave 97 lectures in schools within their territory, with an attendance of 46,785. In 1927, the Western Electric Co., through the same means, reached approximately a million people. Advertising is placed by the Bell System in college publications to engender good will.

Numerous instances of Bell System efforts to indoctrinate professors and students are available. Articles prepared by college professors on utility subjects are perused carefully by Bell System officials. If theories and arguments are presented which are considered adverse to the best interests of the Bell System, the authors are contacted and diplomatic attempts made either to change the author's opinion or to secure his agreement to a change of wording.

An excellent illustration of attempts at indoctrination of students is afforded by the lectures of Nathaniel T. Guernsey during the years 1914-1933. From 1914 to 1919, Guernsey was general counsel of the American Co.; general counsel and vice president from 1919 to 1926; and vice president only from 1926 to 1930.

The purpose of Guernsey's lectures was to indoctrinate college, law school, and graduate students with a philosophy favorable to public utilities in general and the Bell System in particular, on controversial questions. Indoctrination of professors was attempted in the same manner. Guernsey's invitations to lecture were generally not spontaneous but solicited by local representatives of the Bell System. Copies of outlines of most of his lectures were printed for distribution. The subject matter of the lectures was invariably the vital controversial issues upon which the Bell System was waging constant battle, such as reasonable rates, valuation, depreciation, regulation versus management, etc. The viewpoint was that of the company; the analysis, that of Guernsey; the citations, the strongest the legal department of the company could find to support its position. The general subject discussed by Guernsey was the regulation of public utilities. The lectures were generally given over a period of from 3 to 5 days during regular class periods. They consisted of the following: A definition of a public utility and of regulation; power of States to regulate; jurisdiction of courts and regulatory bodies; the general scope of the commission laws; discussions of what is a reasonable and just rate; the function of the State commission; and problems relating to the valuation of public utility property, capitalization, revenue, depreciation, value, and the reproduction cost theory of determining value.

The chief methods employed in indoctrinating students in secondary and primary schools are lectures, demonstrations, and motion pictures. Visual education through the means of motion pictures has been a powerful influence in aiding the Bell System to sell its ideology to the youth of the country.

Another educational policy of the Bell System is exemplified by its participation in work of public utility information bureaus organized in the several States and variously known as committee on public utility information, public service information bureau, public utility information bureau, utility association, or public service bureau. The purpose of these public utility bureaus was the distribution of publicity favorable to utility interests. They were sponsored by gas, electric, and telephone companies and were active in behalf of the National Electric Light Association and the American Telephone & Telegraph Co. Most of the associated companies of the Bell System joined the State information bureaus. During the period 1926-35, inclusive, a total of \$189,513.58, was paid by associated companies to the State committees. Most Bell System companies withdrew from the State committees in 1928 and 1929, as the result of the institution

of the Federal Trade Commission's investigation of the activities of such committees.

Propaganda through motion pictures.—During the past 10 years, the American Co. has produced 56 motion-picture films for publicity purposes. These films have been shown in all parts of the United States. The number of showings ranged from 33,211 in 1926, to 146,474 in 1931. The attendance at films produced by the American Co. ranged from 18,557,313 in 1935 to 74,074,854 in 1931. The production and distribution cost of these films for the last 6 years, exclusive of salaries, traveling expenses of personnel, and various incidental expenses, amounted to more than half a million dollars. The motion-picture bureau of the American Co. was organized in 1924. It is a part of the information and advertising department of the American Co. Contacts are generally made through directors of motion-picture theater chains or managers of motion-picture houses.

The films produced by the Bell System have generally been of an educational type. An example of films produced by the American Co. is the picture entitled, "Getting Together." Soon after the introduction of the hand telephone set as standard equipment a great deal of criticism was leveled at the company by subscribers because of the extra monthly rental charge for hand telephone set service. This picture, "Getting Together," was apparently made in an effort to quiet some of these protests. The picture was produced by trick photography, showing the automatic self-assembly of the hand set. Its scheme was as follows: First, a complete hand set was shown on a desk; next, an animated "imp" was shown arranging on a screen a list of the materials used in manufacturing a hand set; following that, an unassembled mass of individual parts was portrayed. Presently, the parts were made to march to martial music about the desk in parade and were then made to form a completed instrument. The entire picture was accompanied by music. The picture was designed to show the great number of raw materials and separate parts required in construction of the hand telephone set and to suggest the difficulty of manufacturing problems involved. Bell System officials claimed that it helped silence some of the criticism of the extra charge on the hand telephone set.

In addition to the showings of the Bell System pictures in theaters, the associated companies arrange for many showings in schools and civic association meetings. The films are furnished to schools and civic associations free of charge and, if necessary, an operator and projector are supplied gratuitously. In many instances, notably Philadelphia, Allentown, and Pittsburgh, as well as numerous cities in Ohio, the boards of education have permitted the entire series of Bell System films to be shown to the student bodies. A typical illustration of the manner in which Bell System films were introduced in schools is afforded by the plan of the Ohio Bell Telephone Co. That company published several pamphlets, including Plan Your Program with Telephone Films, and The Telephone Story in Words and Pictures, in which were listed the names and descriptions of all Bell System films available for distribution. These pamphlets were circulated throughout Ohio. The public was urged to take advantage of the offer, inasmuch as the service was to be furnished without cost. These pamphlets, together with advertisements, were circulated through parent-teachers' associations and mention made of them in magazines and

other school publications. When a school answered such an advertisement, the Ohio Bell sent a pamphlet listing the available films. In some instances, educational booklets were sent out for use in classrooms. The titles of these booklets were of the following nature: The Birth and Babyhood of the Telephone, Overseas Telephone Service, The Magic of Communication, The Early Corporate Development of the Telephone, Two-Way Television, Telephone Almanac, The Telephone in America, Aircraft Radio Development, From the Far Corners of the Earth. During the 4-year period 1932-35, inclusive, Bell System films received 5,047 showings and reached 1,103,530 students in Ohio.

Relations with the press.—Bell System companies attempt to establish and maintain friendly relations with newspaper editors, publishers, and reporters in their respective localities. Intimate contacts with editors and reporters are established and systematically maintained. Bell System publicity managers advise local representatives to cultivate newspaper reporters as well as editors on the theory that it is the reporters' copy that appears as news and that it is the "reporter of today who will be the editor of tomorrow."

The commercial department, through its exchange, district, and division managers and other employees, is charged generally with maintaining these friendly relations. Newspaper publicity and editorial matter are furnished to, and advertising placed with, the press by the regular commercial organizations. Through these contacts the company seeks to win the confidence and friendship of persons connected with the press.

For a number of years the press has been given a great many articles prepared by Bell System companies and presented to editors for publication. Generally, these articles deal with construction activities, changeability of service, human-interest stories, information on rates, and other matters involving the telephone. Although the subject matter may be classified as "news," the company selects and treats the material in such a manner that the public is likely to be impressed favorably. News matter is regarded by Bell System managers as more convincing to the general public than similar information when presented in the form of paid advertising. In addition to the publicity received as a direct result of "hand-outs" or stories prepared for publication, the companies secure a large amount of publicity through the distribution of clip sheets, employees' magazines, and other printed material placed in the hands of editors by the commercial department. The information department of the American Co. compiles a monthly bulletin on telephone information for the newspapers called News and Views of the Telephone Service. This bulletin was preceded by Telephone Press Service, which was inaugurated in 1921. These bulletins are distributed through the associated companies to newspapers. They contain a note to the editors that no credit need be given for using the material offered. During the period 1926-35, a total of 1,419,732 copies of News and Views of the Telephone Service were distributed by the American Co. and associated companies to newspapers. Surveys made by the American Co. show that extensive use is made by newspapers of this type of information. The American Co. also distributes large numbers of The Telephone Almanac through the associated companies, which in turn make them available to editors. The Telephone Almanac is

a modern manual of information in ancient dress, containing information and data of the United States, particularly regarding the history of development of communications. During the period 1926-35, inclusive, a total of 13,330,942 manuals were distributed by the associated companies in their respective areas.

The Bell System companies maintain contacts with editors, not only through personal visits, but by attendance at newspapers' association meetings. The investigation disclosed an instance in which concession service was granted by a Bell System operating company to a State press association and that a newspaper, edited by the secretary of the association, published an editorial favorable to the Bell System and also discussed with certain public officials the general subject of the reasonableness of telephone rates. It is a general practice of Bell System companies to have personal contacts with newspaper editors whenever items appear which are critical or unfriendly to the company. Attempts are made in these conferences to influence the future attitude and course of action of such editors. Explanations are made as to the reasons for certain Bell System policies which may be criticized. In this manner, it has been possible to check adverse criticism on the part of the press. Bell System companies also investigate unfavorable items contributed by the public to the open forum of newspapers. Personal interviews are generally arranged with subscribers who have written letters to editors criticizing the company. In some instances, the companies have secured agreements from editors that they will submit such letters of criticism to representatives of the company for their examination before publication.

Bell System publicity reaches its peak during the periods when rate increases are either pending or proposed. Publicity during these periods is organized systematically, along the following lines: The preparatory canvass for public endorsement of the rate project, preparation of newspaper advertisements preliminary to hearing, during the hearing, and following the decision; preparation of publicity for use by employees, including letters, booklets, and envelope enclosures; publicity for use of subscribers and the general public, comprising letters, booklets, and envelope enclosures; publicity for the press, including new stories, interviews, and suggestions for editorials; suggestions with respect to the type of talks to be made to commercial clubs and similar organizations; preparation of publicity for window posters; preparation of samples of resolutions to be adopted by commercial clubs.

Testimony introduced at the hearings in the special investigation illustrates the manner in which a judicious placing of advertising with certain newspapers has changed the attitude of the editor from one of opposition to one of cooperation. Generally, Bell System advertising is of two types, institutional advertising for the purpose of selling the system to the public, and service-sales advertising, to sell the services of the company. The general objective of newspaper advertising from the Bell System viewpoint is to aid the public in understanding the policies, practices, problems, and ideals of the system to the end that the companies may be able to furnish the best possible service at the lowest possible cost.

The chief function of the institutional advertising is to create goodwill among the subscribers and the public in general. It has been

directed, therefore, at the feelings, attitudes, and emotional beliefs of the public through the dissemination of specific types of information. Advertisements are grouped according to specific types of appeal. Illustrations of these have been grouped under the following general headings: Constant expansion requires new inventions; Bell growth has kept pace with the needs; old equipment has been discarded for newer and better equipment, etc. These in turn, have been placed under headings which represent people's feelings, attitudes, and emotional beliefs, and grouped under the following: Constant progress, the telephone as a convenience, the necessity for efficient operation, constant service improvement, popular ownership, necessity of central unified control, romantic elements of communication, the subscriber must do his part, superiority of United States telephone service, diversity of stock ownership in the Bell System, and amount of taxes paid by the system. The foregoing represents statements of the purpose of advertising insofar as its effect upon the public is concerned.

During the period 1922-35, inclusive, the Bell System spent a total of approximately \$68,000,000 for advertising.⁴

The Bell System does comparatively little advertising by radio, despite the fact that it is one of the beneficiaries of radio broadcasting through the leasing of circuits for program transmission service. The reasons, as stated by one of its advertising agents,⁵ for the Bell System's failure to advertise more extensively over radio are twofold; first, such advertising would direct the public's attention to the amount of money being spent for advertising purposes, and second, the probable adverse effects upon the established goodwill of newspaper editors.

Economic Contacts.

In addition to indoctrination through various processes of promotional education, the Bell System's aim of protecting its investment and revenues is aided by economic contacts such as corporate connections, banking relations, insurance and material purchases, and wide distribution of stock.

*Corporate connections.*⁶—By means of interlocking directorates, the corporate connections of the Bell System are quite extensive. On November 1, 1935, the American Co. had 40 officers and directors. Of these, 23 had official positions with 195 business organizations outside of the Bell System, 137 of which business organizations controlled net assets of approximately \$30,000,000,000, as of December 31, 1934. When the \$5,000,000,000 of Bell System assets are added, the total consolidated assets over which these 23 men have some control, either individually or collectively, approximate \$35,000,000,000. These contacts were established through important positions held in outside concerns, such as president, chairman of the board, vice president, or director. Although these men do not have exclusive control over this vast accumulation of wealth, each, with few exceptions, is an important executive officer of a corporation, bank, or insurance company which accounts for a substantial portion of the total assets. Most of these men occupy positions in these large concerns comparable to that of W. S. Gifford in his capacity as president of the American Co. For example, among the directors of the

⁴ Exhibit 866.

⁵ See exhibit 2002.

⁶ A detailed discussion of this subject is contained in exhibit 228, ch. 1, pp. 1-23.

American Co., W. W. Aldrich is chairman of the board of the Chase National Bank; the late George F. Baker, Jr., was chairman, and S. A. Welldon is vice president of the First National Bank of New York; Daniel Willard is president of the Baltimore & Ohio Railroad Co.; Philip Stockton, president of the First National Bank of Boston; David F. Houston, president of the Mutual Life Insurance Co.; Myron C. Taylor, chairman of the board of directors of the United States Steel Corporation.

The situation is broader and more persuasive if the directorial ramifications of the whole Bell System are considered. Considering only the 35 controlled Bell companies, which are the most important in the more than 200 controlled companies in the system, there were on January 1, 1935, 537 officers and directors, 272 of whom had 2,400 positions in 1,468 non-Bell business concerns. They held 354 presidencies, 63 chairmanships, 1,436 directorships, 149 vice presidencies, 105 memberships on executive committees, 73 trusteeships, as well as many other important positions. Over 90 percent of the positions were those of chairman of the board of directors, president, vice president, director, trustee, and member of executive and finance committees. With 165 of the 1,468 organizations, Bell companies had 2 or more people in common. These companies, plus the Bell System, represented total consolidated net assets of over \$44,000,000,000. This amount includes, in addition to 90 percent of the telephone assets of the country, 11.7 billions, or approximately 20 percent, of the banking assets; 11 billions, or approximately 41 percent, of all insurance assets; and nearly 5½ billions, or approximately 18 percent, of the steam railroads in the United States.

There are 19 organizations in the United States and the Dominion of Canada in which 4 or more men connected with the Bell System have officers or directors holding similarly important positions. These outside corporate contacts of the Bell System afford a tremendous opportunity for advertising the system's aims among those businesses and organizations controlling great wealth.

*Banking relations.*⁷—Relations of Bell System companies with the banks of the United States are extensive. The American Co. and 21 of the associated companies, "exclusive of their subsidiaries," have maintained deposits in between 4,000 and 5,000 banks during the period 1926-35. Then in 1929 they had deposits in approximately 4,900 banks, and in 1935, in 4,355 banks. Inasmuch as the total number of active banks decreased from 28,000 in 1926 to approximately 16,000 in 1935, the percentage of the total banks used by the Bell System has increased from 16 percent to 28 percent of the total banks in the United States.

In May 1935 the average daily balance of the American Co. and the associated Bell companies was over \$60,000,000. Of this amount, more than 40 millions were on deposit with 25 important banks located largely in New York and Boston, the remainder being scattered in smaller sums throughout the rest of the 4,355 banks then used as depositories.

Numerous exhibits introduced in the course of the investigation showed that in the selection of banks as depositories, consideration was given to the possible effect upon the company's public relations. In making selection of banks from the viewpoint of public relations,

⁷ For detailed discussion, see exhibit 229, pp. 1-59.

consideration has been given to the influence of officers and directors, and the activity of bank officials in the political and civic life of their respective communities.

Distribution of insurance purchases.—It was a practice of the Bell System to distribute the insurance which it carried on its various exchanges in a manner designed to promote and foster good public relations. In the selection of insurance agencies reliance is generally placed upon the consideration of the question from a public-relations viewpoint. City officials, including mayors and members of the city commissions, seem to be particularly favored as beneficiaries of Bell System policies. In instances the evidence shows that these officials have performed specific services for the company while holding public office. Persons who are prominent or influential or who are considered to have political influence in their communities are favored with insurance patronage. There are instances where insurance has been placed with persons having connections with newspapers and State insurance commissioners. In 1930, however, the Bell System adopted self-insurance as a major practice and at the present time much of its insurance is self-carried.

Material purchases.—The vast amount of material purchases for the Bell System offer the possibility of using economic pressure upon suppliers to bring about action favorable to the Bell System. Most of the material purchases in the system are made by the Western Electric Co., the manufacturing affiliate. That this resource is not generally overlooked is indicated by the conditions under which contracts for directory printing are given.⁸ Investigation shows that on numerous occasions contracts are given to printers without competitive bids or to bidders offering a price which may be higher than the lowest bid.

Political Activities.⁹

Another means employed by the Bell System in protecting its investment and revenues is influence brought to bear on public-service commissions and other legislative bodies.

Relations with public service commissions.—Bell System relations with State utility commissions are diverse. Contacts are made generally during times of rate litigation, either upon applications for reduction on behalf of the public, or applications for increases by the company. Informal conferences have been held with commissioners in attempts to win their support to Bell System views. Indirect aid is given by Bell System companies to defeat the appointment or election of commissioners opposed to Bell System views. Aid, in the form of free telephone service, both exchange and toll, is sometimes given elective candidates during the period of campaigning for office. Such expenses in some instances are charged off as uncollectible accounts on the books of the company. Employment of influential State politicians during the pendency of a rate case is another frequent Bell System practice. Free or concession service is sometimes given to State commissioners and certain commission employees.

Legislative activities.—The files of the American Co. disclose that the objective of the legislative activities of the Bell System is to foster and retain every possible protection for its private ownership, service, rates, financing, labor relations, and every other element of its business

⁸ See exhibit 2108, pp. 49-51.

⁹ For details, see exhibit 2096-E, ch. 8, pp. 160-192.

which it regards as desirable and conducive to its own well-being. Through the persistent and coordinated efforts of its Nation-wide organization and friendly contacts, under the guidance and suggestions of the parent company, it has sought to prevent the introduction and passage of legislation adversely affecting its interests or activities. It has secured the modification and amendment of legislation in such a way as to defeat or to emasculate the main purpose, or has been able to exempt the Bell System or the telephone industry from the provisions of such bills.

The organization of Bell System legislative activities may be stated briefly as follows: In each State and in the District of Columbia the Bell System, through the local associated company, has one or more attorneys or agents who are charged with the responsibility of watching and reporting upon pending legislation. Each local legislative counsel or agent keeps his company's main office informed with respect to the introduction of bills of interest to the Bell System, and the status of these bills during their legislative progress. A large number of these bills are referred directly to the New York office of the American Co. Testimony from Bell officials at the hearings indicated that approximately 10,000 bills were examined by the legal department of the parent company in New York during the odd-numbered years when about 40 State legislatures are in session and about 5,000 bills were examined regularly each year. These bills are analyzed to determine their bearing on Bell System policies. Advice is given by the parent company to local counsel as to the position to be taken, whether in support, opposition, or modification of a particular measure. A memorandum from the office of the general counsel of the American Co. specifically states the type of bills in which the Bell System has an interest. They are as follows:¹⁰

1. Telephone and telegraph companies specifically.
2. Organization, rights, powers, duties, and liabilities of corporations.
3. Trusts, monopolies, and discrimination.
4. Taxation of corporations, domestic and foreign.
5. Special assessments when applicable to the property of telephone and telegraph companies.
6. Eminent domain where the powers are extended or restricted.
7. Regulation of public utilities by State commissions, or municipal or other authority.
8. Public ownership of public utilities, State or municipal.
9. Transmission lines.
10. Use of highways by wire-using companies, including grants, regulations, restrictions, and limitations, both general and local.
11. Bucket shops and poolrooms.
12. Labor, including workmen's compensation, social insurance, health insurance, minimum wages, master and servant, hours and conditions of labor, wages, employment of females and children, arbitration, labor controversies.
13. Execution, acknowledgment, and recording of deeds conveying real estate or easements therein.
14. Investments in securities of public utilities by financial institutions, insurance companies, etc.
15. Sales of securities.
16. The initiative and referendum.
17. Taxation generally.
18. Matters not specifically referred to in this list but which, for any reason, may be of interest to the Bell System.

¹⁰ See exhibit 63, and Transcript of Record, Federal Communications Commission, Special Investigation Docket 1, pp. 626-633.

As to such bills, the following information is sought:

1. A notice of the introduction of the bill and its general scope, and of the committee to which it is referred. This is transmitted immediately to the New York office.
2. Two or more copies of each bill are sent as soon as it is printed.
3. Where there is any delay in printing, typewritten copies of the bills enumerated in subdivisions 1 to 9, inclusive, in the above list, and of such other bills as require more prompt attention than the delays incident to waiting for the printed copies would permit are forwarded.
4. A semimonthly record of progress concerning all pending bills of interest is transmitted to New York.
5. Where bills are being drafted relating to subjects enumerated in subdivisions 1 to 9 above, inclusive, copies are transmitted before their introduction if obtainable.

The methods used by Bell System companies in legislative activities are diverse. Generally, they involve every stage in the machinery of legislation. They may be summarized as follows:

1. Influence of legislators and other officials through informal talks and lobbying.
2. Attempts to kill bills in committees through strategic moves of one kind or another. This includes preventing bills from going to unfriendly committees, preventing bills from being reported by committees, and defeating or suppressing bills in committees.
3. Attempts to persuade the authors of bills to refrain from introducing them, to withdraw them, or to cease pushing them.
4. Arranging with legislators to perform parliamentary maneuvers to keep bills from being acted upon, after having been reported out of committee.
5. Arranging with legislative members to keep bills at the foot of the legislative calendar so that they will not be reached during the session.

Under the legislative policies and practices of the Bell System, close personal contact with many legislators and officials is maintained by representatives of the Bell System.¹¹ As in the case of public service commissions, free or concession service has been given to legislators and officials. As stated heretofore, there are instances where legislative leaders have been employed by the Bell System, either for aid in specific cases or on an annual basis.

Summary.

The history of public relations of the Bell System indicates a growing understanding of the necessity for good public relations in the interest of protecting the investment and dominant position of the Bell System in the communications field. In its effort to establish good public relations, the Bell System has engaged in an extensive educational campaign designed to establish in the public mind the idea that the organization of the Bell System gives the most efficient and inexpensive telephone service in the world. This campaign has been carried on through the system's employees, institutional advertising, and contacts with various groups, including representatives of the press.

The progress of the Bell System in developing satisfactory public relations is aided by contacts of its representatives, including intercorporate connections, banking relations, purchases of material or other services, and wide distribution of its common stock. There is some evidence that the Bell System has been active in influencing the actions of legislative bodies charged with regulation of rates for telephone service and other legislative matters affecting the Bell System revenues or expenses.

¹¹ See Transcript of Record, Federal Communications Commission, Special Investigation, Docket 1, pp. 871-908.

CHAPTER 18

PROFITS OF THE BELL SYSTEM

The purpose of this chapter is to present a historical survey of the profits made by the Bell System and by each of its principal functional divisions. First, the record of earnings of Bell System parent companies, the American Bell Telephone Co. and American Telephone & Telegraph Co., are considered, followed by a brief discussion of the operating results of the Bell System. Next, the operating results of other parts of the system, from which the parent companies of the system derived their income, are analyzed. The long lines department, considered as an operating unit, the associated Bell Telephone companies, and Western Electric Co. are treated separately. The license contract, as a source of revenue to the parent company, has already been discussed.¹ Other comparatively minor revenues, such as those received from the Bell Telephone Co. of Canada, Cuban American Telephone & Telegraph Co., patent royalties, etc., are mentioned only briefly, as their contributions to the American Co.'s income have been relatively small.

Public interest is concerned, of course, in the record of earnings of a national public utility of the magnitude of the Bell System, which derives its income ultimately from the telephone rate payer. Profits, naturally, are the primary objective of private enterprise. In the telephone business the subscriber is ultimately the contributor of these profits and is interested in the level of the telephone rates which give rise to them. Regulatory agencies are the arbiters between subscribers and owners and are interested in both the level of charges to subscribers and the rate of profit. Hence, the paramount importance of this subject.

SECTION 1. PROFITS OF THE PARENT COMPANY

The profits of the American Bell Telephone Co. and of American Telephone & Telegraph Co., the parent companies of the Bell System from 1880 to 1899 and from 1900 to date, respectively, were derived primarily from the vast telephone network controlled by these companies directly and through subsidiaries. The nature of the parent companies' revenues, by major sources, is summarized below:

1. Dividends, license fees, and interest received from associated Bell Telephone companies.
2. Earnings from operations of the long lines department of the American Co.
3. Dividends and interest from Western Electric Co., Inc., the manufacturing division of the Bell System.
4. Dividends, license fees, and interest from the Bell Telephone Co. of Canada.
5. Dividends and interest from other subsidiary and miscellaneous companies.

¹ See ch. 6, *supra*.

Earnings of the General Department.

A summary of income and surplus statements for the period 1880 to 1935, inclusive, of American Bell Telephone Co. and American Telephone & Telegraph Co. is given in table 76. In this table, only the net income from long lines operations of the American Co. has been included in the revenues, in line with the general accounting procedure followed by the company's general department, in order to show the earnings obtained by the parent organization from this functional division of the Bell System on a basis more nearly comparable with the dividends and interest received from the associated Bell Telephone companies.²

TABLE 76.—*Summary of income and surplus statements of American Bell Telephone Co. and American Telephone & Telegraph Co. for the period 1880 to 1935, inclusive*

Particulars (a)	1880 to 1935, inclusive		1880 to 1899, inclusive		1900 to 1935, inclusive	
	Amount (b)	Percent (c)	Amount (d)	Percent (e)	Amount (f)	Percent (g)
Revenues:						
Dividends.....	\$1,993,572,269	59.91	\$26,432,135	39.39	\$1,967,140,134	60.34
Interest.....	355,154,334	10.67	2,273,868	3.39	352,880,466	10.82
License fees.....	509,687,977	15.32	31,629,025	47.14	478,058,952	14.66
Long lines net income.....	453,540,429	13.63	4,166,391	6.21	449,374,038	13.78
Miscellaneous.....	15,459,185	.47	2,600,438	3.87	12,858,747	.40
Total revenues.....	3,327,414,194	100.00	67,101,857	100.00	3,260,312,337	100.00
Expenses and taxes:						
Departmental expenses.....	301,672,086	9.06	8,361,779	12.45	293,310,307	9.00
Maintenance and depreciation of telephone instruments.....	63,793,408	1.92	2,541,024	3.79	61,252,284	1.88
Taxes.....	41,670,103	1.24	2,480,205	3.70	39,189,896	1.20
Total expenses and taxes.....	407,135,597	12.23	13,383,008	19.94	393,752,589	12.08
Net earnings.....	2,920,278,597	87.77	53,718,849	80.06	2,866,559,748	87.93
Interest and other deductions.....	480,799,820	14.45	2,723,416	4.06	478,076,404	14.66
Net income.....	2,439,478,777	73.32	50,995,433	76.00	2,388,483,344	73.26
Dividends paid.....	2,150,739,852	64.64	43,830,336	65.32	2,106,909,516	64.62
Balance to surplus.....	288,738,925	8.68	7,165,097	10.68	281,573,828	8.64
Add (or deduct): Direct surplus adjustments.....	¹ 40,335,209	¹ 1.21	¹ 27,941,921	41.64	¹ 68,277,130	¹ 2.10
Undistributed earnings.....	248,403,716	7.47	35,107,018	52.32	213,296,698	6.54

¹ Denotes decrease.

Source: Exhibit 1360-B, tables 72 and 73, pp. 385 and 388, and schedules 36 to 38, inclusive.

On this basis of presentation, total revenues of the parent companies of the Bell System for the 56-year period were \$3,327,000,000.³ All but \$67,000,000 were obtained in the 36-year period ending with 1935. Total net income from 1880 to 1935, inclusive, was \$2,439,000,000, after taxes, interest, and other deductions. Of this amount, all but fifty-one millions accrued since 1900. The parent company paid dividends of \$2,151,000,000 during the years 1880-1935, inclusive, nearly forty-four millions before 1900, and \$2,107,000,000 since, leav-

² The continuous record of the annual revenues of the parent organization of the Bell System from 1881 to 1935, inclusive, is given in exhibit 1360-B, schedules 41 and 42.

³ In view of the magnitude of the figures, they are rounded to the nearest million wherever feasible.

ing an undistributed net income for the whole period 1880 to 1935, inclusive, of \$248,000,000, after surplus adjustments. Of the total revenues received during the period of 56 years, \$1,994,000,000 consisted of dividends, which were 59.91 percent of the total revenues of \$3,327,000,000; license fees accounted for \$510,000,000, or 15.32 percent; long lines net income, \$453,000,000, or 13.63 percent; interest, \$355,000,000, or 10.67 percent; and miscellaneous revenues, \$15,000,000, or 0.47 percent of the total.

In view of the dual nature of the American Co. as the holding company of the Bell System, represented by its general department, and as an operating company of long-distance telephone service, represented by its long lines department, the earnings record of the general department and that of the long lines department are analyzed separately in sections 1 and 3 of this chapter, respectively.

Revenues of the general department.—An additional summary of the income and surplus accounts of American Bell Telephone Co. and American Telephone & Telegraph Co. from May 1, 1880, to December 31, 1935, including in revenues only the net income resulting from the operations of the long lines department, is presented in table 77. This summary of the income and surplus accounts for the entire period 1880 to 1935 has been segregated into intermediate periods as follows:

May 1, 1880, to December 31, 1886, immediately prior to commencement of long-lines operations by the American Co., then a subsidiary of American Bell.

January 1, 1887, to the end of 1899, when American Bell was consolidated with the American Co.

January 1, 1900, to December 31, 1927, the date of sale of the telephone instruments to associated companies.

January 1, 1928, to December 31, 1935, a period when the main sources of the American Co.'s revenues were the same as at present.

TABLE 77.—*Summary of income and surplus accounts of American Telephone & Telegraph Co. and American Bell Telephone Co. for the period from May 1, 1880, to Dec. 31, 1935*

Item	Particulars	May 1, 1880, to Dec. 31, 1886 ¹	Years 1887 to 1899, inclusive ²	Years 1900 to 1927, inclusive ³	Years 1928 to 1935, inclusive ³	Total, May 1, 1880, to Dec. 31, 1935
	(a)	(b)	(c)	(d)	(e)	(f)
1	Revenues:					
2	Dividends.....	\$2,531,164	\$23,900,971	\$906,791,424	\$1,060,348,710	\$1,993,572,269
3	Interest.....	195,199	2,078,069	195,805,604	157,074,862	355,154,334
4	Instrument rentals and license fees.....	7,774,468	23,854,557	356,017,714	122,041,238	509,687,977
5	Long lines net income.....		4,166,391	246,568,005	202,506,033	453,540,429
6	Miscellaneous.....	510,004	2,090,434	5,491,323	7,367,424	15,459,185
7	Total.....	11,010,835	56,091,022	1,710,974,070	1,549,338,267	3,327,414,194
8	General department expenses, taxes and depreciation.....	2,695,958	10,687,060	226,404,492	167,348,097	407,135,597
9	Net earnings.....	8,314,877	45,403,972	1,484,569,578	1,381,990,170	2,920,278,597
10	Interest and other deductions.....	214,798	2,508,618	268,576,643	209,499,761	490,799,820
11	Net income.....	8,100,079	42,895,354	1,215,992,935	1,172,490,409	2,439,478,777
12	Deduct dividends paid.....	6,629,225	37,201,111	912,046,728	1,194,862,788	2,150,739,852
13	Balance to surplus.....	1,470,854	5,694,243	303,946,207	*22,372,379	288,788,925

¹ American Bell Telephone Co.

² American Bell Telephone Co. and American Telephone & Telegraph Co. combined, after eliminating intercompany dividends.

³ American Telephone & Telegraph Co.

* Denote red figures.

TABLE 77.—*Summary of income and surplus accounts of American Telephone & Telegraph Co. and American Bell Telephone Co. for the period from May 1, 1880, to Dec. 31, 1935—Continued*

Item	Particulars	May 1, 1880, to Dec. 31, 1886	Years 1887 to 1899, inclusive	Years 1900 to 1927, in- clusive	Years 1928 to 1935, in- clusive	Total, May 1, 1880, to Dec. 31, 1935
	(a)	(b)	(c)	(d)	(e)	(f)
13	Surplus adjustments:					
	Premium on capital stock of American Bell Telephone Co. as of Dec. 30, 1899.....			\$6,816,559		\$6,816,559
14	Profit on sale of telephone instruments as of Dec. 31, 1927.....			14,395,800	\$4,599	14,391,201
15	Miscellaneous surplus additions (or deductions) net.....	\$12,428,927	\$15,362,014	\$9,156,542	\$307,166	18,326,603
16	Discount, premium, and expenses on long-term debt issues charged to surplus or reserve for contingencies.....	9,050	142,560	\$48,609,354	\$5,525,528	\$53,683,272
17	Excess of par value of capital stock of American Telephone & Telegraph Co. exchanged on a 2 for 1 basis for outstanding capital stock of American Bell Telephone Co. as of Dec. 30, 1899.....			\$25,886,300		\$25,886,300
18	Undistributed surplus for period.....	13,908,201	21,198,817	241,506,370	\$28,209,672	248,403,716
19	Surplus at beginning of period ^a	13,908,201	13,908,201	35,107,018	276,613,388	276,613,388
20	Surplus at end of period ^a	13,908,201	35,107,018	276,613,388	248,403,716	248,403,716

^a Denote red figures.

^b Includes reserve for contingencies of American Telephone & Telegraph Co.

Source: Exhibit 1360-B, schedules 36 to 42, inclusive, 57, 58, and 61, and supporting analyses.

(1) *Composition of revenues (1880-99).*—The composition of the revenues in these different periods is, of course, a reflection of the major activities of the American Bell and American Telephone & Telegraph Cos. During the period May 1, 1880, to December 31, 1886, instrument rentals and license fees were the principal source of revenue, accounting for \$7,774,000, or over 70 percent of the total revenues of \$11,000,000. The dividend income during the 6 years 8 months amounted only to \$2,500,000. This dividend income was principally revenue upon stock obtained from local operating companies as franchise stock at the time temporary licenses were converted into permanent licenses. During this period there was no segregation of long lines net income, which then was of relative minor importance and was included in miscellaneous revenues. It was not until 1885 that the American Telephone & Telegraph Co. was organized as a subsidiary long-distance telephone company of American Bell Telephone Co.

In the next period, covering the 13 years from 1887 to 1899, inclusive, the revenues from dividends became as important as revenues from instrument rentals and license fees. The former produced \$23,900,971, or 42.61 percent of the total revenues for this period of \$56,091,022, and the latter \$23,854,557, or 42.53 percent of the total. In this period long lines appeared as a source of net income, producing \$4,166,391, or 7.43 percent of the total. Interest and miscellaneous revenues together produced an additional 7½ percent of the total. The principal sources of revenue during the years 1880 to 1899 may be summarized as follows:

Classes of revenue	May 1, 1880, to Dec. 31, 1886		Years 1887 to 1899, inclusive		May 1, 1880, to Dec. 31, 1899	
	Amount	Percent of total	Amount	Percent of total	Amount	Percent of total
Dividends.....	\$2,531,104	22.99	\$23,900,971	42.61	\$26,432,135	39.39
Interest.....	195,199	1.77	2,078,669	3.70	2,273,868	3.39
Instrument rentals and license fees.....	7,774,468	70.61	23,854,557	42.53	31,629,025	47.14
Long lines net income.....			4,166,391	7.43	4,166,391	6.21
Miscellaneous.....	510,004	4.63	2,090,434	3.73	2,600,438	3.87
Total.....	11,010,835	100.00	56,091,022	100.00	67,101,857	100.00

The large increase in dividend revenues is explained by the fact that before and after the expiration of the original Bell patents in 1893 and 1894, the American Bell Telephone Co. pursued a definite policy of acquiring stock control of licensees by increasing its equity interest in them.⁴ On the other hand, instrument rentals and license fees did not increase proportionately as fast as dividends, because after the expiration of the patents the rentals on telephone instruments were reduced.

(2) *Composition of revenues (1900-35).*—A general indication of the American Co.'s policies with respect to acquisition of stock interest in subsidiaries, instrument rentals, and the expansion of long lines business, is reflected clearly in the record of the general department's income in the years 1900 to 1935, inclusive, as indicated in the following tabulation:⁵

Classes of revenue	Years 1900 to 1927, inclusive		Years 1928 to 1935, inclusive		Years 1900 to 1935, inclusive	
	Amount	Percent of total	Amount	Percent of total	Amount	Percent of total
Dividends.....	\$906,791,424	53.00	\$1,060,348,710	68.44	\$1,967,140,134	60.34
Interest.....	195,805,604	11.44	157,074,802	10.14	352,880,406	10.82
Instrument rentals and license fees.....	356,017,714	20.81	122,041,238	7.88	478,058,952	14.66
Long lines net income.....	246,868,005	14.43	202,506,033	13.07	449,374,038	13.78
Miscellaneous.....	5,491,323	.32	7,367,424	.47	12,858,747	.40
Total.....	1,710,974,070	100.00	1,549,338,267	100.00	3,290,312,337	100.00

During this period of 36 years, from 1900 to 1935, inclusive, dividends amounted to \$1,967,000,000, or 60.34 percent of total revenues of \$3,260,000,000. Instrument rentals and license fees produced \$478,000,000, or 14.66 percent of the total. Long lines net income amounted to \$449,000,000, or 13.78 percent of the total. It was pointed out in chapter 15 that during this period the American Co. pursued a policy of making short-term advances to finance associated company expansion, later converting them into common stock. These advances constituted a substantial source of revenue to the American Co. This is indicated by the interest revenues during the 36 years under consideration. Of the interest revenues of the general department amounting to \$353,000,000, or 10.82 percent of the total revenues, approximately 70 percent represented interest on advances to associated telephone companies.

⁴ See ch. 1, sec. 2.

⁵ Summarized from table 77.

In comparison with the period from 1880 to 1900, the revenues since the beginning of the present century have consisted principally of dividends on investments in the stock of subsidiaries. License fees, notwithstanding substantial increases in amounts, have become progressively a less important source of revenue, whereas long lines net income and interest revenues have become more important.

There have been three important changes in instrument rentals and license fees, which partly explain the change in the relative importance of this source of revenue. In 1902, the instrument rentals were placed upon a fee basis, calculated as a percentage of the gross telephone revenues of the licensees. Instead of rentals per instrument a $4\frac{1}{2}$ -percent charge on gross telephone revenues of licensees was instituted. As of January 1, 1926, the fee was reduced to 4 percent of gross telephone revenues. In December 1927 the instruments, until then owned by the parent company of the Bell System, were sold to the associated companies, and at the same time the license fee was reduced from 4 to 2 percent, effective January 1, 1928. A year later, the license fee was reduced by the American Co. to $1\frac{1}{2}$ percent of gross telephone revenues of the associated companies. These changes are reflected in the revenues of the general department derived from this source. From 1900 to 1927, inclusive, instrument rentals and license fees accounted for 20.81 percent of the total revenues of the general department, whereas from 1928 to 1935, inclusive, they accounted for only 7.88 percent, due principally to the reduction in the fees subsequent to the sale of the instruments. Coincidentally, dividend revenues increased in importance from 53 percent of general department revenues in the period 1900-27, inclusive, to 68.44 percent of total revenues in the years 1928-35, inclusive.

The same relative changes in the importance of various sources of revenues of the general department are observed in the comparison of the absolute amounts of income derived in the 28 years from 1900 to 1927, inclusive, and the 8 years from 1928 to 1935, inclusive. The total amount of dividends in the latter 8 years was greater than that of the preceding 28 years by over \$153,000,000. Long lines net income was only \$44,000,000 less for the 8 years than it was for the preceding period; and interest revenues were only \$38,000,000 less for the 8-year period than they were for the 28-year period. But license fees were about \$234,000,000 less for the 8-year period than they were for the 28-year period. The decline in the relative importance of license fees is explained principally by the reduction in the rate for computation of the fee, and partially by the decline in gross telephone revenues during the depression years.

The classification of general department revenues by major sources, namely, associated companies, long lines, Western Electric, and others, as shown in table 78, indicates that during the 36 years, 1900 through 1935, \$2,441,000,000 out of total general department revenues of \$3,260,000,000, or 74.87 percent, came from associated companies, consisting of dividends on common and preferred stock (53.47 percent of total revenues), interest on notes, advances, open accounts, and funded debt (7.71 percent of total revenues), and license fees (13.69 percent of total revenues). The next substantial source of income for the general department of the American Co. was the long lines department, which contributed a total of \$476,000,000, or 14.60 percent of total revenues. Western Electric supplied \$186,000,000, or 5.71 percent of total revenues. These three sources,

therefore, provided the general department of the American Co. with \$3,003,000,000, or 95.18 percent of its total revenues during the years 1900-35, inclusive.

The ultimate source of practically all of this total was the telephone rate payer. This is not to imply at this point that the sums indicated above are excess charges, but merely to point out that the revenues of the general department of the American Co., which occupies the position of a holding company in the system, are derived from the telephone business in the United States. This may be questioned insofar as revenues from Western Electric Co. are concerned, since it sells some small amount of telephone equipment to other than Bell customers and also sells a variety of nontelephonic products to outsiders. But it has been shown that this non-Bell and nontelephonic business is small in relation to sales to Bell customers, and is admittedly incidental to the position of Western Electric Co. as the manufacturing department of the Bell System.⁶

TABLE 78.—Composition of revenues of general department of American Telephone & Telegraph Co. by principal sources, for the period 1900 to 1935, inclusive, and for the year 1936

Item	Sources of revenues	1900 to 1935, inclusive		1936	
		Amount	Per- cent of total	Amount	Per- cent of total
		(b)	(c)	(d)	(e)
	Associated Bell Telephone Companies:				
1	Dividends on common stock.....	\$1,665,525,705	51.09	\$144,696,024	65.32
2	Dividends on preferred stock.....	77,481,599	2.38	3,845,742	1.74
3	Interest on notes, advances and open accounts ¹	239,262,109	7.84	4,680,744	2.11
4	Interest on funded debt.....	12,210,063	.37	-----	-----
5	License fees.....	446,439,628	13.69	13,095,750	5.91
6	Total.....	2,440,919,104	74.87	166,318,260	75.08
	Long lines department:				
7	Long lines net income.....	449,374,038	13.78	32,289,676	14.58
8	License fees.....	26,717,360	.82	1,095,071	.76
9	Total.....	476,091,398	14.60	33,984,747	15.34
	Western Electric Co.:				
10	Dividends on common stock.....	174,792,886	5.36	16,406,431	7.41
11	Dividends on preferred stock.....	6,145,031	.19	-----	-----
12	Interest on notes, advances, and open accounts ¹	5,357,506	.16	-----	-----
13	Interest on funded debt.....	4,711	-----	-----	-----
14	Total.....	186,300,134	5.71	16,406,431	7.41
	Other companies:				
15	Dividends on common stock.....	36,411,716	1.12	1,123,055	.51
16	Dividends on preferred stock.....	6,783,197	.21	-----	-----
17	Interest on notes, advances, and open accounts ¹	21,786,791	.67	323,876	.15
18	Interest on funded debt.....	4,126,201	.12	655,000	.29
19	License fees.....	4,901,964	.15	354,781	.16
20	Total.....	74,009,869	2.27	2,456,712	1.11
21	Miscellaneous interest and other income.....	82,991,832	2.55	2,340,590	1.06
22	Total revenues.....	3,280,312,337	100.00	221,506,740	100.00
	SUMMARY				
23	Associated Bell Telephone companies.....	2,440,919,104	74.87	166,318,260	75.08
24	Long lines department.....	476,091,398	14.60	33,984,747	15.34
25	Western Electric Co.....	186,300,134	5.71	16,406,431	7.41
26	Other companies.....	74,009,869	2.27	2,456,712	1.11
27	Miscellaneous.....	82,991,832	2.55	2,340,590	1.06
28	Total.....	3,260,312,337	100.00	221,506,740	100.00

¹ Includes interest on installment payments on stock subscriptions.

Source: Exhibit 1360-B, table 77, p. 397; Comptroller's Annual Report of American Telephone & Telegraph Co. for 1936.

⁶ See ch. 2, tables 19 and 20, pp. 59, 60.

The manner in which the general department's income is derived from the telephone service is obvious from the very nature of the income. Dividends on associated companies' stocks are, of course, grounded in the rate of return allowed on the value of utility property. Similarly with interest on notes, advances, etc. But here it is possible that some interest on construction work in progress is capitalized, instead of being a direct incidence upon the rate of return. License fees are included by the Associated companies in the cost of furnishing communication services, since they are entered as operating expenses. The same conditions apply to net income and license fees obtained from the long lines department.

Revenues from Western Electric Co. enter into the cost of telephone service in a somewhat different manner. Dividends on Western Electric stock enter into the cost of telephone equipment insofar as they are paid from profits derived from sales of such equipment to the associated companies. In view of the relation of Western to the associated companies, where prices are subject to administrative decision by the managements of the American Co. and of Western Electric, the earnings on common stock become a part of the cost to the associated companies of the equipment purchased from Western and, therefore, are capitalized in telephone plant, or charged to maintenance expense when such equipment is used to make repairs.⁷

Disposition of revenues.—What was the disposition of all these revenues collected by the general department of American Telephone & Telegraph Co., principally from the associated companies, long lines, and Western Electric Co.? On analysis it is found that most of the income went to security holders in interest and dividends, the latter being the more important share. From May 1, 1880, to December 31, 1935, total revenues of the American Bell and American Telephone & Telegraph Cos., taking only the net income of long lines operations into account, aggregated \$3,327,000,000. General department expenses, taxes, and depreciation took up \$407,000,000, leaving net earnings of \$2,920,000,000. Interest and other deductions required an additional \$481,000,000, leaving thereby a net income of \$2,439,000,000. Thus, general department expenses, taxes, and depreciation absorbed 12.23 percent of total revenues, and interest and other deductions 14.45 percent. Dividend payments amounted to \$2,151,000,000 over this period, or 64.64 percent of total revenues, leaving at the end of 1935 undistributed income of \$248,000,000, after absorbing net surplus charges of over \$40,000,000.

A study of the disposition of total revenues by periods covering the years 1880 to 1899 and 1900 to 1935, inclusive, indicates that in both periods about 65 percent of total revenues has been paid out in dividends. This is shown in table 79. General department expenses, taxes, and depreciation took up 19.94 percent of total revenues in the period from May 1, 1880, to December 31, 1899, whereas interest and other deductions in this early period took up only 4.06 percent, which was due to the fact that in the early years the parent company had a small amount of debt outstanding. Also in the period from 1900 to 1935, inclusive, 12.08 percent of the total revenues went to general-department expenses, taxes, and depreciation, and 14.66 percent to interest and other deductions, which was due to a consider-

⁷ See sec. 5 of this chapter.

able rise in parent company debt as compared with the previous period, although in comparison with total capitalization funded debt was still a small percentage.⁸

The foregoing analysis clearly indicates that the major portion of the parent company's revenues comes from the telephone service, and that it in turn pays out a preponderant part of its revenues as dividends to its own stockholders, leaving a substantial undistributed net income in its surplus.

TABLE 79.—Disposition of the revenues of general department of American Telephone & Telegraph Co., years 1880 to 1935, inclusive

Item and particulars (a)	May 1, 1880, to Dec. 31, 1899		Years 1900 to 1935, in- clusive		May 1, 1880, to Dec. 31, 1935	
	Amount (b)	Percent of total (c)	Amount (d)	Percent of total (e)	Amount (f)	Percent of total (g)
1. Total revenues.....	\$67,101,867	100.00	\$3,260,312,337	100.00	\$3,327,414,194	100.00
2. General-department expenses, taxes and depreciation.....	13,383,008	19.94	393,752,589	12.08	407,135,597	12.23
3. Interest and other deductions.....	2,723,416	4.06	1,478,076,404	44.66	1,480,799,820	44.45
4. Dividends paid.....	43,880,386	65.32	2,106,909,516	64.62	2,150,739,853	64.64
5. Total.....	59,936,760	89.32	2,978,738,509	91.36	3,038,675,269	91.32
6. Balance to surplus.....	7,165,097	10.68	281,573,828	8.64	288,738,925	8.68
7. Direct surplus additions (or de- ductions), net.....	27,941,921	41.64	1,68,277,130	5.10	1,40,335,209	4.21
8. Undistributed earnings for period.....	35,107,018	52.32	213,296,698	6.54	248,403,716	7.47

¹ Includes amortization of discount and expense on long-term debt only for years 1916 to 1921, inclusive, over \$50,000,000 of such discount and expenses having been charged to surplus.

² Deductions.

Source: Exhibit 1360-B, tables 72 and 73, pp. 385 and 388, and schedules 37, 38, 39, 40, 58, and 61.

Measure of profitability.—Up to this point, the over-all financial results of the Bell parent organizations have been considered. This over-all picture, however, does not give a clear indication of the extent of profitability of parent-company operations. To do this, it is necessary to analyze the net income of the holding company in the light of the amount of money invested by the company and its stockholders. For the purpose of revealing the extent of the company's profitability, certain significant ratios have been evolved which disclose the rate of return on the company's investments and the rate of return to the company's stockholders. In arriving at these ratios, the rate of earnings of the American Co. is considered on four bases; on total investment, on par value of capital stock, on paid-in capital (par value plus capital stock premium), and on common-stock equity.

There is still the problem of defining the earnings that are to be taken as measures of profitability. To solve this problem, the net earnings of the company are analyzed on three different bases of calculation: (a) The first takes into account only the recorded net earnings of the American Co., which include only the income actually received and entered in the company's income statement; (b) the second, here designated as "Bell Telephone System earnings available,"

⁸ See ch. 15, sec. 1.

is composed of the American Co.'s recorded net earnings plus its equity in the undistributed earnings of the associated Bell Telephone companies; and (c) the third, designated as "total earnings available," represents the sum of the parent company's recorded net earnings and its equity in the undistributed earnings of associated Bell Telephone companies and all other controlled companies, including Western Electric Co. The facts available permit an analysis of earnings calculated on the first two bases for the entire period 1900 to 1935, inclusive. On the third basis the available data permit a comparison only for the period 1922 to 1935, inclusive. In the remaining pages of this section, the American Co.'s profitableness will be measured by applying net earnings calculated by all three methods upon the company's total gross and net investments, and by applying net income calculated by the same methods upon the par value of the outstanding common stock, the paid-in capital, and the common-stock holders' equity.

Rate of Return on Investment.

In arriving at the rates earned on investment, the net earnings on the three bases mentioned above are related to total assets, which include the gross book cost of telephone plant and equipment, taken as gross investment, and total assets less the reserves for depreciation and for amortization of intangible capital, taken as net investment. The average of the recorded assets at the beginning and at the end of each year is taken as the average investment for that year.

The amounts and the percentages of (a) recorded net earnings, (b) Bell Telephone System earnings available, and (c) total earnings available to average gross and average net investment are given in tables 80 and 81. In analyzing these figures, it should be kept in mind that the rates of return are not applied to the net investment of American Co. security holders, but to the total investment of the American Co. The figures of gross investment include amounts equal to the balances of the depreciation and amortization reserves, earned surplus, current liabilities, and miscellaneous reserves, in addition to proceeds of long-term debt and stocks. The net investment includes the same amounts, except the portion equivalent to the balances in the depreciation and amortization reserves. To this extent, the ratios in tables 80 and 81 are understated as compared with the return on security holders' actual investment.

TABLE 80.—Average investment and net earnings American Telephone & Telegraph Co., years 1900 to 1935, inclusive

Year	Average gross investment ¹	Average net investment	Net earnings		
			Recorded net earnings	Bell Telephone System net earnings available	Total net earnings available ²
(a)	(b)	(c)	(d)	(e)	(f)
1900.....	\$94,205,763	\$93,521,579	\$5,591,371	\$7,482,474	.....
1901.....	111,493,789	110,731,289	7,483,027	9,607,330	.....
1902.....	146,583,749	144,583,749	10,241,621	12,661,392	.....
1903.....	185,287,814	184,287,814	12,938,924	15,140,408	.....
1904.....	214,490,199	213,490,199	12,893,689	15,817,206	.....
1905.....	237,950,538	236,950,538	15,554,867	19,200,891	.....
1906.....	277,941,209	276,941,209	17,403,951	20,595,078	.....
1907.....	337,375,540	335,394,578	22,478,753	26,355,122	.....
1908.....	391,773,193	388,426,075	24,696,086	28,682,392	.....
1909.....	449,078,864	444,449,646	28,841,224	35,261,041	.....
1910.....	486,443,592	479,918,224	30,776,274	37,493,949	.....
1911.....	527,869,283	519,388,301	32,071,589	37,793,453	.....
1912.....	586,142,639	575,850,052	37,912,431	45,311,512	.....
1913.....	631,359,199	619,839,798	40,583,161	46,406,600	.....
1914.....	642,286,652	629,929,139	40,563,708	45,722,043	.....
1915.....	625,790,495	612,833,812	41,132,863	50,410,475	.....
1916.....	672,862,719	657,774,546	44,748,468	59,115,951	.....
1917.....	743,075,600	725,450,713	48,943,320	56,289,479	.....
1918.....	794,429,407	774,002,446	54,297,998	52,248,575	.....
1919.....	876,125,073	852,663,433	60,288,619	56,752,525	.....
1920.....	941,050,294	914,519,138	70,861,472	60,234,255	.....
1921.....	1,009,611,847	980,417,618	73,696,054	80,325,112	.....
1922.....	1,117,821,681	1,085,763,242	81,710,705	93,057,265	\$93,935,965
1923.....	1,239,795,699	1,204,019,827	95,412,018	104,555,755	107,368,722
1924.....	1,392,999,727	1,352,993,544	107,629,614	112,574,092	115,549,203
1925.....	1,562,043,798	1,518,399,612	128,962,770	145,415,076	156,585,271
1926.....	1,744,221,231	1,695,664,916	138,932,874	161,522,303	170,230,821
1927.....	1,896,885,227	1,853,527,886	198,324,353	219,517,047	186,399,752
1928.....	2,082,585,150	2,044,163,458	165,269,606	195,251,398	209,944,000
1929.....	2,345,462,743	2,299,491,659	193,824,480	226,118,695	234,178,810
1930.....	2,819,974,871	2,765,907,567	197,981,941	215,144,969	207,715,417
1931.....	3,183,786,269	3,122,498,347	197,819,045	206,329,600	204,558,670
1932.....	3,158,606,926	3,094,235,380	171,121,937	148,912,104	136,488,420
1933.....	3,095,568,085	3,025,088,432	162,300,340	139,184,700	125,185,438
1934.....	3,056,602,740	2,974,599,217	145,912,501	143,323,125	135,331,326
1935.....	3,016,194,346	2,923,993,255	149,237,937	153,777,012	156,226,214

¹ Average total assets (the sum of the balances of total assets at the beginning and end of each year divided by 2).

² Equity in undistributed net income of all controlled companies not available prior to 1922.

³ The assets at Jan. 1, 1900, included a franchise carried on the books at \$2,500,000, and written off to the contingent account by the end of 1900.

⁴ Includes a special dividend of \$47,938,865 from Western Electric Co., Inc.

Source: Exhibit 1300-B, table 83, p. 422.

TABLE 81.—*Net earnings on average investment of American Telephone & Telegraph Co., years 1900 to 1935, inclusive*

Year	Net earnings on average gross investment			Net earnings on average net investment		
	Recorded net earnings	Bell Telephone System net earnings available ¹	Total net earnings available ¹	Recorded net earnings	Bell Telephone System net earnings available	Total net earnings available ¹
(a)	(b)	(c)	(d)	(e)	(f)	(g)
	Percent	Percent	Percent	Percent	Percent	Percent
1900.....	5.94	7.94	-----	5.98	8.00	-----
1901.....	6.71	8.62	-----	6.76	8.68	-----
1902.....	7.03	8.70	-----	7.08	8.76	-----
1903.....	6.98	8.17	-----	7.02	8.22	-----
1904.....	6.01	7.37	-----	6.04	7.41	-----
1905.....	6.54	8.07	-----	6.56	8.10	-----
1906.....	6.26	7.41	-----	6.28	7.44	-----
1907.....	6.66	7.81	-----	6.70	7.86	-----
1908.....	6.30	7.32	-----	6.36	7.38	-----
1909.....	6.42	7.85	-----	6.49	7.93	-----
1910.....	6.33	7.71	-----	6.41	7.81	-----
1911.....	6.08	7.16	-----	6.17	7.28	-----
1912.....	6.47	7.73	-----	6.58	7.87	-----
1913.....	6.43	7.35	-----	6.54	7.49	-----
1914.....	6.32	7.12	-----	6.44	7.26	-----
1915.....	6.57	8.06	-----	6.72	8.23	-----
1916.....	6.65	8.79	-----	6.80	8.99	-----
1917.....	6.59	7.58	-----	6.75	7.76	-----
1918.....	6.83	6.58	-----	7.02	6.75	-----
1919.....	6.88	6.48	-----	7.07	6.66	-----
1920.....	7.53	6.40	-----	7.75	6.59	-----
1921.....	7.30	7.96	-----	7.52	8.19	-----
1922.....	7.31	8.32	8.40	7.53	8.57	8.65
1923.....	7.79	8.43	8.66	7.92	8.68	8.92
1924.....	7.73	8.08	8.29	7.95	8.32	8.54
1925.....	8.26	9.31	10.02	8.50	9.58	10.31
1926.....	7.97	9.26	9.76	8.19	9.53	10.04
1927.....	10.46	11.57	9.83	10.70	11.84	10.06
1928.....	7.94	9.38	10.08	8.08	9.55	10.27
1929.....	8.26	9.64	9.98	8.43	9.83	10.18
1930.....	7.02	7.63	7.37	7.16	7.78	7.51
1931.....	6.21	6.48	6.43	6.34	6.61	6.55
1932.....	5.42	4.71	4.32	5.53	4.81	4.41
1933.....	5.24	4.50	4.04	5.37	4.60	4.14
1934.....	4.77	4.69	4.43	4.91	4.82	4.55
1935.....	4.95	5.10	5.18	5.10	5.26	5.34

¹ Equity in undistributed net income of all controlled companies not available prior to 1922.

Source: Exhibit 1360-B, table 84, p. 425.

A recapitulation of table 81 into a frequency table of number of years during the period 1900-1935 in which certain rates of return have been earned, shows that even on the basis of comparison as above outlined, which is quite conservative, the American Co.'s earnings have been very favorable. This is depicted in the following tabulation:

	Percent							
	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-13
Recorded net earnings on average gross investment.	2	3	19	9	2	-----	1	-----
Bell Telephone System net earnings available on average gross investment.....	3	1	4	14	9	4	-----	1
Recorded net earnings on net investment.....	1	4	16	10	4	-----	1	-----
Bell Telephone System net earnings available on average net investment.....	3	1	4	12	11	4	-----	1

In 31 out of 36 years from 1900 to 1935, inclusive, the rate of recorded net income to average gross investment of the American Co. was above 6 percent, in 12 of which it was above 7 percent. The rate of return of Bell Telephone System net earnings on average gross investment was above 7 percent in 28 out of 36 years. The conditions have been somewhat similar, when the ratios of net recorded earnings and of Bell Telephone System earnings on average net investment of the American Co. are considered. The best showing is made, of course, on the basis of Bell Telephone System net earnings on average net investment, which shows that in 28 out of 36 years this rate was above 7 percent and in 16 years it was above 8 percent.

Realining the American Co.'s rates of return on the various bases indicated in table 81 into averages for certain selected periods, it is found that only in periods of extreme economic depression, such as during 1932-35, has the average rate for the period been as low as 4 or 5 percent. In other periods, the performance has been most favorable, as shown in table 82. For the whole period 1900-1935, inclusive, the ratio of recorded net earnings to average gross investment was 6.72 percent, and to average net investments 6.87 percent; whereas the ratio of Bell Telephone System earnings available to the American Co. on average gross investment was 7.22 percent, and on average net investment 7.39 percent.

TABLE 82.—Comparison of the average rates earned on gross and net investment by the American Telephone & Telegraph Co., years 1900 to 1935, inclusive¹

Year or period (a)	Average return on gross investment			Average return on net investment		
	Recorded net earnings (b)	Bell Telephone System earnings available (c)	Total net earnings available (d)	Recorded net earnings (e)	Bell Telephone System earnings available (f)	Total net earnings available (g)
	Percent	Percent	Percent	Percent	Percent	Percent
1900-1917.....	6.45	7.73	-----	6.55	7.85	-----
1918-20.....	7.10	6.48	-----	7.30	6.66	-----
1921-31.....	7.74	8.63	-----	7.93	8.83	-----
1932-34.....	5.15	4.63	4.26	5.27	4.74	4.37
1935.....	4.95	5.10	5.18	5.10	5.26	5.34
1900-1935.....	6.72	7.22	-----	6.87	7.39	-----
1900-1929.....	7.57	8.52	-----	7.74	8.72	-----
1922-29.....	8.30	9.40	9.52	8.50	9.64	9.76
1922-31.....	7.77	8.66	8.70	7.95	8.87	8.90
1922-35.....	6.73	7.14	7.06	6.89	7.31	7.23

¹ Source: Exhibit 1360-B, table 85, p. 429.

Focusing attention on certain significant intermediate periods during these 36 years, it is found that particular series of years have been much more profitable than indicated by the average of the whole period. The years 1922-29, inclusive, of course, have been the most profitable. The ratio of recorded net earnings on average gross investment for these years was 8.3 percent, and on average net investment, 8.5 percent. The ratio of Bell Telephone System earnings available to the American Co. on average gross investment was 9.4 percent, and on average net investment, 9.64 percent. For the period 1922-29, in addition to the rates just cited, there are available the total net earnings of all subsidiaries available

to the American Co. These, applied on gross investment, showed an average of 9.52 percent for the period, and on average net investment, 9.76 percent. For the period 1900-29, inclusive, the average rate of return of recorded net earnings on average gross investment was 7.57 percent, and on average net investment, 7.74 percent. For the same period Bell Telephone System earnings available, calculated on average gross and average net investment, yielded average returns of 8.52 and 8.72 percent, respectively.

In considering these ratios of net earnings to investment, it should be borne in mind that average gross investment includes amounts equal to the balances of depreciation and amortization reserves, surplus, current liabilities and miscellaneous reserves, in excess of the amounts paid in by the company's security holders, and average net investment includes the same elements with the exception of the amount equivalent to the average balance of the depreciation and amortization reserves. As the bases upon which these ratios are derived include more than the paid-in capital and common-stock holders' equity, the rates of earnings on the actual cash supplied by the security holders and on the common-stock holders' equity were larger. This will be shown later in this chapter to have been the case so far as the stockholders were concerned. The results shown above for such long periods are significant, since they reflect favorably upon the American Co.'s securities as investment risks, which is a primary factor in the ability of the American Co. to attract capital, a function which it has undertaken for the entire Bell System.*

Income on Common Stock.

Dividend payments.—The American Bell and the American Telephone & Telegraph Cos. have paid dividends continuously since 1880. The annual rates of dividends paid are one indication of the profits made by these companies, although they are by no means complete evidence, because during the larger part of the period, when these dividends were being paid, large amounts of undistributed income were being credited to surplus. At other times, such as the years 1931-35, part of the dividends have been paid out of surplus. The following tabulation indicates the dividends paid per share of capital stock by the two parent companies of the Bell System, at various times since 1881:

Annual dividends per share

American Bell Telephone Co.:

Calendar years:

1881.....	\$7
1882.....	10
1883.....	12
1884.....	15
1885-87.....	16
1888-93.....	18
1894-99.....	15

American Telephone & Telegraph Co.:

Calendar years:

1900-05.....	7½
1906.....	7½
1907-20.....	8
1921.....	8½
1922-37.....	9

* See ch. 15.

From the foregoing tabulation, it would appear that the rate of dividend was reduced from \$15 to \$7.50 per share in 1900 at the time of the transfer of American Bell Telephone Co. assets to the American Telephone & Telegraph Co. This, of course, is not the case, since as a result of transfer of the former's assets to the latter, 2 shares of American Co. stock were given in exchange for 1 share of American Bell Co.'s stock. Therefore, the dividends of \$7.50 to \$9 paid on American Co.'s stock were equivalent to 15 to 18 percent on the American Bell stock held prior to the 2-for-1 exchange effected in 1900. At that time there were outstanding 258,863 shares of American Bell stock, for which 517,726 shares of American Telephone & Telegraph Co. stock were given in exchange. This was, in effect, a 100-percent stock dividend, and the dividend payments subsequent thereto by the American Co. on these 517,726 shares should be judged accordingly.

In addition to paying these liberal cash dividends, and what amounted to a 100-percent stock dividend of \$25,886,300, the two successive parent companies accumulated an undistributed surplus of almost \$400,000,000 in the 52 years from 1880 to December 31, 1931. This large undistributed surplus, which was accumulated during the more prosperous years, enabled the American Co. to continue to pay its \$9-per-share dividend during the severe depression years 1932-35, when recorded net earnings did not cover dividend requirements. In addition to the current net income of \$530,918,919 during those years, surplus was drawn upon to the extent of \$140,-917,110 to pay dividends.¹⁰

Since large amounts of surplus were accumulated in addition to paying substantial dividends, to obtain an idea of the rate of profit on common stock it is necessary to analyze the net income and the equity in the income of subsidiaries of the American Co. on the basis of the par value, as well as the paid-in capital, of its stock. In the following discussion an analysis is given of American Co.'s net income upon those bases.

Income on par value of common stock.—In this discussion of profits on par value of American Co. common stock, income is considered upon the same three methods of calculation as in the examination of earnings on investment, namely, recorded net income of the American Co., Bell Telephone System net income available, and total net income of all controlled companies available to the American Co. A detailed tabulation of earnings on par value of stock from 1900 to 1935, inclusive, is given in table 83.¹¹ An over-all picture is obtained in the following tabulation of the earnings per share of the American Bell and the American Telephone & Telegraph Cos. since 1881, by certain periods:

Period	Average annual recorded net income per share	Average annual Bell Telephone System earnings per share	Period	Average annual recorded net income per share	Average annual Bell Telephone System earnings per share
Mar. 1, 1881, to Dec. 31, 1899.....	\$18.40	-----	1930-35.....	\$7.92	\$7.76
1900-19.....	9.77	\$11.61	1900-29.....	11.44	13.18
1920-29.....	12.38	14.06	1900-35.....	9.86	10.74

¹⁰ See exhibit 1300-B, p. 362.

¹¹ The facts in table 83 are graphically presented in chart 12, p. 507.

The above figures indicate that from March 1, 1881, to the end of 1899, the average annual recorded net income per share was \$18.40. For all other significant periods, with the exception of 1930 to 1935, inclusive, the average annual recorded net income per share was nearer \$10, \$11, or \$12. Even during the 6 years, 1930 to 1935, inclusive, which constituted the most severe depression period in modern industrial history, the average annual recorded net income per share was \$7.92. Only in 1932 to 1935, inclusive, has the annual recorded net income gone below \$8 per share. In the period 1920-29 the recorded net income per share was above \$11 in every year, the average being \$12.38. The average for the period 1900-1929 was \$11.44. For the whole period 1900-1935 it was \$9.86. For the year 1936 the recorded net income was \$9.36 per share of outstanding stock; in 1937 it was \$9.62; and \$8.16 in 1938.

Considering the Bell Telephone System net income available to the common-stock holders of the American Co., we find a still more favorable condition from 1900 to 1929, when the average income per share on this basis was \$13.18. For the period 1920-29 the average income per share on this basis amounted to \$14.06. In the 36-year period from 1900 to 1935 the average Bell Telephone System income per share of American Co. stock was \$10.74. Only during the years 1918 to 1920 and 1931 to 1935, inclusive, did the income per share go below these averages. During the latter depression period, the average income was \$7.76 per share.

The income of controlled companies applicable to American Co.'s common stock for the period from 1922 to 1935, inclusive, is given in table 83, column (e). A comparative summary for the periods 1922-29 and 1930-35 is presented in table 84. The total net income of controlled companies available to American Co.'s stockholders was, on the average, \$10.37 per share. From 1922 to 1929, the average on this over-all basis was \$14.66. During the period 1930-35, however, the average total income per share of American Co. stock was only \$7.38. This was lower than either the recorded net income per share or the total Bell Telephone System income per share of American Co. stock. This decline was principally due to the losses recorded by Western Electric in the years 1932, 1933, and 1934.

CHART 12

NET INCOME PER SHARE OF CAPITAL STOCK AMERICAN TELEPHONE AND TELEGRAPH COMPANY

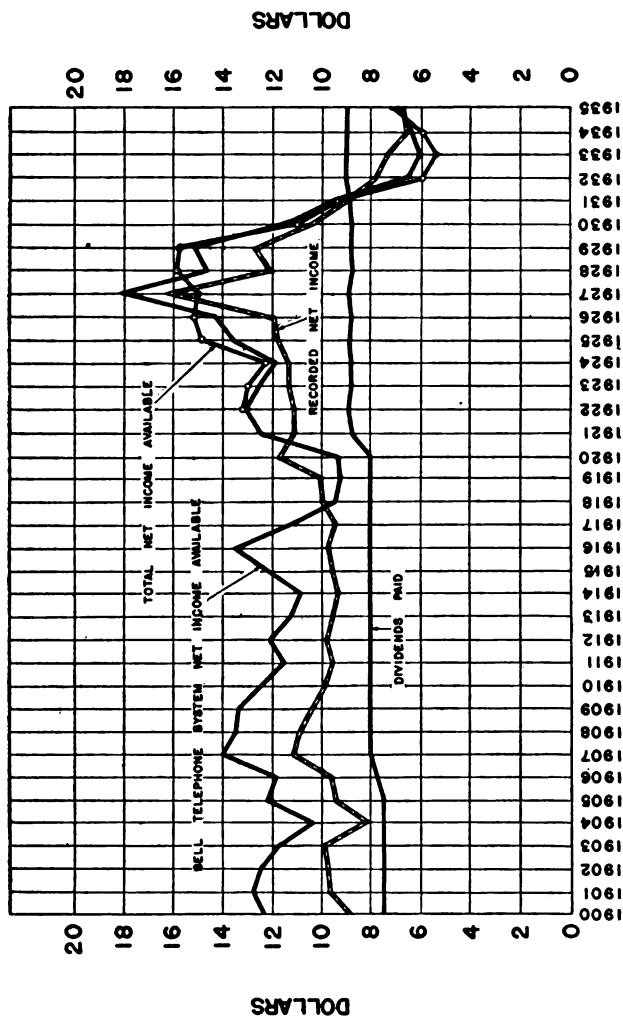


TABLE 83.—*Net income per share of capital stock, American Telephone & Telegraph Co., years 1900 to 1935, inclusive*

Year (a)	Average number of shares outstanding (b)	Recorded net income (c)	Bell Telephone System net income available (d)	Total net income available ¹ (e)	Dividends paid (f)
1900	543,813	\$8.82	\$12.30		\$7.50
1901	673,337	9.68	12.84		7.50
1902	877,921	9.80	12.55		7.50
1903	1,149,220	9.90	11.81		7.50
1904	1,306,549	8.18	10.42		7.50
1905	1,315,514	9.43	12.20		7.50
1906	1,315,514	9.52	11.94		7.75
1907	1,367,956	11.16	14.00		8.00
1908	1,557,395	10.99	13.55		8.00
1909	2,129,535	10.38	13.39		8.00
1910	2,597,103	9.90	12.48		8.00
1911	2,771,181	9.56	11.63		8.00
1912	3,251,948	9.36	12.13		8.00
1913	3,431,755	9.59	11.29		8.00
1914	3,446,584	9.38	10.88		8.00
1915	3,637,574	9.52	12.07		8.00
1916	3,890,273	9.77	13.46		8.00
1917	4,060,202	9.48	11.28		8.00
1918	4,403,712	9.97	9.50		8.00
1919	4,419,542	10.05	9.25		8.00
1920	4,422,099	11.72	9.32		8.00
1921	4,864,775	11.10	12.46		8.77
1922	5,940,095	11.14	13.05	\$13.20	8.92
1923	7,199,646	11.35	12.62	13.01	8.79
1924	8,051,495	11.31	11.92	12.29	8.81
1925	9,111,814	11.79	13.59	14.82	8.89
1926	9,790,262	11.95	14.26	15.15	8.83
1927	10,932,420	16.15	18.09	15.06	8.91
1928	11,823,745	12.11	14.64	15.89	8.78
1929	13,113,746	12.67	15.14	15.75	8.87
1930	15,856,696	10.44	11.52	11.05	8.78
1931	18,419,461	9.05	9.51	9.41	8.88
1932	18,661,623	7.82	6.63	5.96	9.00
1933	18,662,275	7.37	6.13	5.38	9.00
1934	18,662,275	6.52	6.39	5.96	9.00
1935	18,662,275	6.74	6.98	7.12	9.00

¹ Equity in undistributed net income not available, prior to 1922, for all controlled companies.² While the stockholders received dividends on a \$3-a-share basis, adjustments made for accrued dividends, less interest allowances on advance payments, for stock issued under new offerings, reduced the actual amount per share charged to the company's net income to the figures shown in this column.

Source: Exhibit 1360-B, table 91, p. 444.

TABLE 84.—*Average net income per share on all 3 bases during significant periods*

Period (a)	Recorded net income (b)	Bell Telephone System net income available (c)	Total net income available ¹ (d)
1922-29	\$12.50	\$14.44	\$14.08
1930-35	7.92	7.76	7.85
1922-35	9.80	10.51	10.27

¹ Data showing the equity in the undistributed income of all directly controlled companies are not available prior to 1922.

Source: Exhibit 1360-B, table 94, p. 450.

Disregarding a special dividend of \$47,938,865 received by the American Co. from Western Electric Co. in 1927, which was designated by the company as having been declared from accumulated earnings and profits derived from activities other than those relating

to the telephone business, the highest annual earnings of the Bell Telephone System, per share of outstanding stock of the American Co., amounted to \$15.14 per share in 1929, and the low was reached in 1933, when it amounted to \$6.13. The foregoing average annual earnings per share of outstanding capital stock are indicative of the exceptionally favorable experience of the American Co. stockholders.

It is significant that in all these periods, with the exception of 1930 to 1935, the American Telephone & Telegraph Co. has earned substantially more than the dividend requirements of \$9 per share. Indeed, reference to table 85, below, indicates that in all the years from 1900 through 1931, excepting 1904 and 1931, the recorded net income was between 15 and 45 percent in excess of dividend requirements.¹² Considering this in relation to the net income of the Bell Telephone System available to American Co. common stock, the picture is still more favorable. During the years from 1900 to 1930, inclusive, the net income of the Bell Telephone System available to American Co. common stock was between 14 and 51 percent in excess of dividend requirements. From 1932 to 1935, inclusive, the reverse was true. Dividend payments exceeded net recorded income as well as net income of the Bell Telephone System available to American Co. common stock, by between 15 and 38 percent, and between 29 and 47 percent, respectively. Table 85 gives a clear picture as to the percent relation of dividend requirements to the recorded net income, Bell Telephone System net income available, and total net income available, in each year since 1900; and table 86 gives the same information for selected periods.

TABLE 85.—*Relation of dividend requirements to net income available, American Telephone & Telegraph Co., years 1900 to 1935, inclusive*

Year (a)	Relation of dividend requirement to—		
	Recorded net income	Bell Telephone System net income available	Total net income available ¹
	(b)	(c)	(d)
	Percent	Percent	Percent
1900.....	84.99	60.97	-----
1901.....	77.45	58.42	-----
1902.....	76.55	59.74	-----
1903.....	75.77	63.48	-----
1904.....	91.67	71.98	-----
1905.....	79.53	61.47	-----
1906.....	81.45	64.90	-----
1907.....	71.67	57.16	-----
1908.....	72.76	59.03	-----
1909.....	77.10	59.74	-----
1910.....	80.85	64.09	-----
1911.....	83.66	68.80	-----
1912.....	81.14	65.93	-----
1913.....	83.40	70.86	-----
1914.....	85.27	73.54	-----
1915.....	84.06	66.29	-----
1916.....	81.87	59.42	-----
1917.....	84.43	70.89	-----
1918.....	80.25	84.18	-----
1919.....	79.64	86.53	-----
1920.....	68.27	85.88	-----

¹ Equity in undistributed net income not available, prior to 1922, for all directly controlled companies.

¹² In 1904 and 1931, the recorded net earnings were only approximately 8 and 2 percent, respectively, in excess of dividend requirements.

TABLE 85.—*Relation of dividend requirements to net income available, American Telephone & Telegraph Co., years 1900 to 1935, inclusive—Continued*

Year	Relation of dividend requirement to—		
	Recorded net income	Bell Telephone System net income available	Total net income available
(a)	(b)	(c)	(d)
	Percent	Percent	Percent
1921.....	79.02	70.38	
1922.....	80.05	68.34	67.57
1923.....	77.45	69.66	67.57
1924.....	77.89	73.88	71.66
1925.....	75.46	65.45	60.03
1926.....	73.93	61.97	58.33
1927.....	55.16	49.24	59.15
1928.....	72.52	59.96	55.27
1929.....	70.03	58.63	56.35
1930.....	84.11	76.21	79.44
1931.....	98.15	93.38	94.34
1932.....	115.11	135.78	150.94
1933.....	122.19	146.89	167.39
1934.....	137.96	140.95	151.09
1935.....	133.51	128.86	125.48

Source: Exhibit 1360-B, table 95, p. 451.

TABLE 86.—*Average relation of total dividend requirements to net income available by periods*

Period	Average relation of dividend requirements to—		
	Recorded net income	Bell Telephone System net income available	Total net income available ¹
(a)	(b)	(c)	(d)
	Percent	Percent	Percent
1900-1919.....	81.20	68.29	
1920-29.....	71.17	62.58	
1922-29.....	70.83	61.28	60.39
1930-35.....	112.92	115.29	121.49
1932-35.....	126.54	137.80	147.47
1900-1929.....	74.23	64.40	
1900-1935.....	88.21	80.92	
1922-35.....	90.87	84.78	85.89

¹ Data showing the equity in undistributed net income of all directly controlled companies are not available prior to 1922.

Source: Exhibit 1360-B, table 96, p. 452.

During the entire period from 1900 to 1935, inclusive, dividend requirements averaged 88.21 percent of recorded net income and 80.92 percent of the Bell Telephone System net income available to the American Co. During 1922 to 1935, inclusive, on the average, dividends required 90.87 percent of recorded net income, 84.78 percent of Bell Telephone System net income, and 85.89 percent of total net income available. During 1922 to 1929, inclusive, requirements averaged only 70.83, 61.28, and 60.39 percent, respectively, by the same three methods of calculating net income. In other words, net

income available on these three bases exceeded dividend needs by 29.17, 38.72, and 39.61 percent, respectively, during this very prosperous period.

On the other hand, during the 6 years 1930-35, average dividend requirements exceeded the average income available on the three bases mentioned, by 12.92, 15.29, and 21.19 percent, respectively. For the 4 years 1932-35, dividend requirements were 26.54, 37.80, and 47.47 percent greater than the current income available on the three bases shown.

The very large excess of net income over dividend requirements during the years previous to 1930 made possible the accumulation of a large surplus, nearly \$400,000,000 by the end of 1931, approximately one-third of which proved sufficient to make up the deficiency in current net income during 1932 to 1935, inclusive, and enabled the company to continue the payment of the annual dividend of \$9 per share during the past depression.

*Reconciliation of rates earned on investment with income on capital stock.*¹³—Except for the year 1927, when American Co.'s net earnings were somewhat out of line due to receipt of a special dividend of \$47,938,865 from the Western Electric Co., the highest rate earned by the American Co. on its gross investment during the period 1900-1935 was 8.26 percent in both 1925 and 1929. The average return on gross investment for the entire 36-year period was 6.72 percent. On the other hand, it has been shown above that income per share of stock has been much higher. The average recorded net income per share for the same period was \$9.86, or 9.86 percent on par value of stock. How was the company able to pay dividends ranging from 8 to 9 percent on the par value of its capital stock during the greater part of this same period, and also accumulate a substantial surplus?

Disregarding the use of surplus to supplement current income to continue payment of the \$9-per-share dividend during 1932-35, the answer to this question lies partially in the fact that the company's investment includes a large element which represents the reinvestment of undistributed earnings, indicated by the balance in surplus. Furthermore, part of invested capital represented proceeds from the sale of bonds, on which the average effective interest rate was less than the 6.72-percent average return for the whole period. Finally, the American Co. has had substantial amounts of depreciation reserves, reflecting a like amount of funds, provided from operations and available for investment in assets, which did not require the issuance of additional stock or interest-bearing obligations. Inasmuch as the rates earned on gross investment represent the average relationship between net earnings and total assets, including telephone plant and equipment at gross book cost, to the extent that any appreciable portion of these assets was financed at costs lower than these average rates, the effect has been to give leverage to the income on common stock. The extent of this leverage and the relative importance of the

¹³ See exhibit 1360-B, pp. 458-462.

respective items contributing thereto are reflected in the following tabulation:

Particulars	Average gross investment	Earnings on average investment	
		Amount	Percent
Total for year 1926.....	\$1,744,221,231	\$138,932,874	7.97
Deduct average amount financed by funds obtained from sources other than capital stock issued, represented by:			
Funded debt.....	386,441,500	20,000,072	5.18
Capital-stock installments.....	38,020,864	2,510,566	6.60
Other liabilities.....	56,043,298	430,463	.77
Depreciation reserves.....	48,556,315		
Reserve for contingencies.....	48,123,871		
Surplus.....	118,531,138		
Total.....	695,716,986	22,941,101	3.30
Average balance financed by capital stock issued.....	1,048,504,245	115,991,773	11.06
Deduct average premium on capital stock issued.....	55,541,595		
Balance relating to average par value of capital stock outstanding during year.....	992,962,650	115,991,773	11.68

¹ Includes amortization of debt discount and expense applicable to this year.

The foregoing tabulation indicates that over 22 percent of the average gross investment in 1926 was financed by means of funded debt at an average cost of 5.18 percent, which was considerably below the average rate of 7.97 percent earned on the total investment. Funds provided from operations, represented by surplus, reserve for contingencies, and depreciation reserves, on which the company had no carrying cost similar to interest on borrowed funds, were equal to more than 12 percent of total investment. The net result of this financing by funds other than capital stock issued was that, in 1926, approximately 40 percent of the average gross investment represented funds secured at an average cost of only 3.3 percent, or considerably less than one-half of the rate earned on total investment.

The low cost of this 40 percent of the investment increased the rate of return on the 60 percent financed through capital-stock issues to 11.06 percent. Deducting the average premium received from the sale of this capital stock, the rate of return on the balance of the investment relating to the par value of the average number of shares outstanding was 11.68 percent.¹⁴

A similar reconciliation of the rates earned on gross investment with the return on par value of average capital stock outstanding during the year ended December 31, 1935, is shown in the following tabulation:¹⁵

¹⁴ This rate differs slightly from that shown earlier in this chapter, 11.95 percent, due to inclusion here of amortization of debt discount and expense as part of the cost of funded debt. The same explanation accounts for the difference in the rates shown for 1935. The company's published financial statements have usually been presented on the basis of charging debt discount and expense to surplus when incurred.

¹⁵ See exhibit 1360-B, p. 461.

Particulars	Average gross investment	Earnings on average investment	
		Amount	Percent
Total for year 1935.....	\$3, 015, 194, 346	\$149, 237, 937	4.95
Deduct: Average amount financed by funds obtained from sources other than capital stock issued, represented by:			
Funded debt.....	443, 913, 550	¹ 23, 426, 681	5.28
Capital stock installments.....	6, 704, 574	247, 347	3.69
Other liabilities.....	68, 895, 587	587, 186	.85
Depreciation reserves.....	91, 201, 091		
Reserve for contingencies.....	64, 664, 444		
Surplus.....	204, 838, 522		
Total.....	880, 217, 768	24, 261, 214	2.76
Average balance financed by capital stock issued.....	2, 134, 976, 578	124, 976, 723	5.85
Deduct: Average premium on capital stock issued.....	268, 749, 078		
Balance relating to average par value of capital stock outstanding during year.....	1, 866, 227, 500	124, 976, 723	6.70

¹ Includes amortization of debt discount and expense applicable to this year.

The year 1935 is somewhat different from 1926, in that in 1935 the average rate earned on gross investment, 4.95 percent, was somewhat less than the cost of that part of total investment financed through funded debt, the cost of which was 5.28 percent. In spite of this, however, the low cost of funds obtained from sources other than funded debt and capital stock, represented mainly by surplus and reserves, brought the average cost of the funds required for 29 percent of investments, including funded debt, down to 2.76 percent, or only slightly more than half of the average rate earned on total investment. The result was to increase the return on the 71 percent of the investment financed through capital stock issues to 5.85 percent, and on the balance relating to the par value of the average capital stock outstanding during 1935, to 6.70 percent.

Income on Paid-In Capital.

It must be recognized that an analysis of net income in comparison with the par value of capital stock does not give an altogether accurate picture of the rate of return on the common-stock holders' contributions of money, because from time to time certain classes of stockholders have paid more than par to the company for the stock issued to them.

As of December 30, 1899, \$51,772,600 par value of the American Co.'s capital stock was issued in exchange for \$25,886,300 par value of outstanding capital stock of American Bell Telephone Co., in connection with the consolidation of the two companies as of that date. From 1900 to 1935, American Co. common stock with par value of \$1,135,092,000 has been sold at par under circular offers to stockholders. On the other hand, \$679,362,900 par value of stock was issued at a total premium of \$281,018,238. The average price on these shares, which were issued at a premium for cash or in exchange for convertible bonds or other consideration, was a little over \$141. Of course, the actual premium paid by various groups in this category of stockholders differed from this average. The average prices paid by these various groups have been discussed in chapter 15, section 4.¹⁸

¹⁸ See table 73, p. 448.

The average par value and premium of American Co. stock from 1900 to 1935, inclusive, hereinafter sometimes referred to as paid-in capital, the amounts and percentages of recorded net income, of Bell System net income, and of total net income available to average par value and premium of American Co. common stock, are given in table 87. During the decade 1900 through 1909 the lowest rate of recorded net income on paid-in capital was 8.18 percent in 1904, a year of business recession following the "rich man's panic" of 1903; the highest rate was 11.16 percent in 1907, a year of substantial business activity until the last quarter, when there was a severe reaction. During this same decade, the rate of Bell System net income available on par value of capital stock and premium was at its lowest, 10.42 percent in 1904, and at its highest, 13.99 percent in 1907.

During the next decade, 1910 to 1919, inclusive, the experience was only slightly less favorable. The lowest rate of recorded net income on par value and premium of capital stock was 8.50 percent in 1914, better than the lowest point of the preceding decade. The highest rate reached on the same basis was 9.06 percent in 1919, somewhat lower than the high point reached in the preceding decade. Bell System net income available on capital stock and premium showed different behavior. The lowest rate occurred in 1919, the very year in which the highest level of recorded net income to par value and premium was reached. The reason, of course, was the payment of dividends by certain of the subsidiary telephone companies out of surplus, as their current net income was not sufficient to meet the dividend requirements. On the other hand, the highest rate of Bell System net income to capital stock and premium occurred in 1916 when it was 12.08 percent.

The decade from 1920 through 1929 was, of course, a period of substantial profits for the American Co. During this period the annual dividend was increased from \$8 to \$9 per share. The rate of return of recorded net income to paid-in capital was at its lowest, 10.09 percent in 1921, a year of severe recession, and at its highest, 15.33 percent in 1927, when a special dividend of some \$48,000,000 was paid by Western Electric Co. If this year is disregarded, the next highest rate of return on this basis was 12.05 percent in 1929, the peak year of postwar prosperity. Considering Bell Telephone System net income available on paid-in capital, it is found that the lowest rate was 8.40 percent in 1920, and the highest rate 17.17 percent in 1927. The next highest rate was in 1929, with 14.39 percent. Total net income available on paid-in capital during the years 1922 to 1929, inclusive, was at its lowest in 1924 at 11.53 percent, and at its highest in 1928 when it was 15.08 percent.

TABLE 87.—Average par value of capital stock outstanding, average premium, recorded net income, Bell Telephone System net income, and total net income available, of American Telephone & Telegraph Co., years 1900 to 1935, inclusive

Year	Average par value of capital stock outstanding	Average premium per book ¹	Total par value plus premium	Recorded net income	Bell Telephone System net income available	Total net income available ²	Percent of par value plus premium		
							Recorded net income	Bell Telephone System net income available	Total net income available
							(h=e+d)	(i=f+d)	(j=g+d)
(a)	(b)	(c)	(d=b+c)	(e)	(f)	(g)	Percent	Percent	Percent
1900.....	\$54,381,300	.....	\$54,381,300	\$4,793,800	\$5,689,903	.....	8.82	12.30	.....
1901.....	67,333,700	\$6,968	67,340,658	6,520,635	8,614,838	.....	9.68	12.84	.....
1902.....	87,792,100	22,229	87,814,329	8,601,654	11,021,425	.....	9.80	12.55	.....
1903.....	114,922,000	30,541	114,952,541	11,375,153	13,576,637	.....	9.90	11.81	.....
1904.....	130,654,900	30,541	130,685,441	10,680,553	13,613,070	.....	8.18	10.42	.....
1905.....	131,551,400	30,541	131,581,941	12,405,243	16,061,267	.....	9.43	12.20	.....
1906.....	131,551,400	30,541	131,581,941	12,517,200	15,708,327	.....	9.51	11.94	.....
1907.....	136,795,600	30,541	136,826,141	15,269,388	19,145,757	.....	11.16	13.96	.....
1908.....	155,739,500	38,676	155,778,176	17,121,707	21,108,013	.....	10.90	13.55	.....
1909.....	212,953,600	12,848	225,801,679	22,085,359	28,515,206	.....	9.79	12.63	.....
1910.....	259,710,300	26,806	286,517,088	25,695,863	32,416,568	.....	8.97	11.31	.....
1911.....	277,118,100	30,241	307,359,313	26,499,266	32,221,130	.....	8.62	10.48	.....
1912.....	325,194,800	32,879	358,074,785	32,062,946	39,462,027	.....	8.95	11.02	.....
1913.....	343,175,500	34,537	377,712,675	32,920,000	38,743,529	.....	8.72	10.26	.....
1914.....	344,658,400	35,842	380,501,015	32,334,814	37,493,149	.....	8.59	9.85	.....
1915.....	363,757,400	39,439	403,196,839	34,618,637	43,895,249	.....	8.59	10.89	.....
1916.....	389,027,300	44,557	433,585,136	38,013,278	52,390,761	.....	8.77	12.08	.....
1917.....	405,020,200	46,187	452,207,355	38,471,106	45,817,265	.....	8.51	10.13	.....
1918.....	440,371,200	47,066	487,437,573	43,901,321	41,851,598	.....	9.01	8.59	.....
1919.....	441,954,200	47,849	489,804,106	41,395,791	40,559,697	.....	9.06	8.34	.....
1920.....	442,209,900	47,925	490,135,811	51,821,216	41,193,090	.....	10.09	11.33	.....
1921.....	486,477,500	48,901	535,379,177	54,002,704	60,631,762	.....	10.57	12.02	.....
1922.....	594,096,500	50,838	644,947,595	66,170,426	77,516,988	\$78,395,688	10.26	12.13	12.16
1923.....	719,964,600	52,310	772,275,369	81,692,181	90,835,918	93,648,885	10.58	11.76	12.13
1924.....	805,149,500	53,180	858,330,488	91,046,321	95,960,799	98,965,910	10.61	11.18	11.53
1925.....	911,181,400	54,217	965,429,220	107,405,046	123,827,352	134,967,547	11.13	12.83	13.96
1926.....	979,028,200	55,541	1,034,567,795	116,940,400	139,579,829	148,288,347	11.31	13.49	14.33

¹ Average of opening and closing balances for each year.² Complete data not available prior to 1922.

TABLE 87.—Average par value of capital stock outstanding, average premium, recorded net income, Bell Telephone System net income, and total net income available, of American Telephone & Telegraph Co., years 1900 to 1935, inclusive—Continued

Year (a)	Average par value of capital stock outstanding (b)	Average premium per books (c)	Total par value plus premium (d=b+c)	Recorded net income (e)	Bell Telephone System net income available (f)	Total net income available (g)	Percent of par value plus premium		
							Recorded net income (h=e÷d)	Bell Telephone System net income available (i=f÷d)	Total net income available (j=g÷d)
							Percent	Percent	Percent
1927.....	\$1,083,242,000	\$53,345,279	\$1,151,587,279	\$176,553,775	\$197,746,469	\$164,629,174	16.33	17.17	14.30
1928.....	1,182,374,500	63,416,605	1,245,791,105	143,170,491	173,152,283	187,844,885	11.49	13.90	15.08
1929.....	1,311,374,600	67,838,497	1,379,213,097	166,180,758	188,483,973	206,544,088	12.05	14.39	14.98
1930.....	1,585,068,600	164,233,512	1,749,302,112	165,544,707	182,707,735	175,278,183	9.46	10.44	10.02
1931.....	1,841,946,100	263,850,093	2,105,796,193	166,666,534	175,177,089	173,406,159	7.91	8.32	8.23
1932.....	1,866,162,300	268,558,831	2,134,821,131	145,906,909	123,697,076	111,273,392	6.83	5.79	5.21
1933.....	1,866,227,500	268,746,078	2,134,973,578	137,456,776	114,341,136	100,341,874	6.44	6.36	4.70
1934.....	1,866,227,500	268,746,078	2,134,973,578	121,748,729	119,169,353	111,167,554	5.70	5.58	5.21
1935.....	1,866,227,500	268,746,078	2,134,973,578	125,806,505	130,345,580	132,794,782	6.89	6.11	6.22

* Includes special dividend of \$47,938,865 received from Western Electric Co., Inc.

Source: Exhibit 1390-B; tables 90 and 91, pp. 442 and 444, and schedule 2.

The year 1930 belongs in the same category as the foregoing decade, as it includes the carry-over of the momentum of the preceding decade. The amount of net income in 1931 was slightly more than in 1928, although the rate of return of recorded net income on paid-in capital went below 8 percent for the first time since 1900 (not very far below, however, since it stood at 7.91 percent); and the rates on the other two bases were 8.32 percent and 8.23 percent. This was mainly due to the increase in the amount of paid-in capital, resulting principally from the conversion in 1930 of convertible bonds issued in 1929 and additional sales of stock under the 1930 circular offering to stockholders. From 1932 on, however, income calculated on all three bases went down definitely below 8 percent on capital stock and premium, and stayed between 5 and 7 percent to the end of 1935. The years 1936 and 1937 have shown improvement, the consolidated net income per share of American Co. stock in 1937 being near \$9.76, or around 8½ percent on paid-in capital. In 1938 consolidated net income was \$8.32 per share, or 7¼ percent on paid-in capital.

The contrast between the prosperous years, 1922 to the end of 1929, and the following depression period, is emphasized by the following averages of percent return of recorded net income, Bell Telephone System net income, and controlled companies' net income, to average par value and premium of capital stock:

Years	Recorded net income	Bell Telephone System net income	Controlled companies' net income
	Percent	Percent	Percent
1922-29.....	11.79	13.63	13.83
1930-35.....	6.96	6.82	6.49
1922-35.....	8.86	9.50	9.38

For the whole period, 1922-35, the average recorded net income was 8.86 percent; Bell Telephone System income available, 9.5 percent; and total income of subsidiaries available, 9.38 percent. In the prosperous years, 1922 to 1929, inclusive, however, the corresponding returns were 11.79 percent, 13.63 percent, and 13.83 percent, respectively; whereas in the depression years, 1930-35, the corresponding rates were 6.96 percent, 6.82 percent, and 6.49 percent, respectively.

The following tabulation gives the number of years in which recorded net income and Bell Telephone System net income available to American Co. stock, calculated on paid-in capital, was between the designated rate of return at intervals of 1 percent:

Rate of return	Number of years		Rate of return	Number of years	
	Recorded net income	Bell Telephone System net income		Recorded net income	Bell Telephone System net income
5 to 6 percent.....	2	3	11 to 12 percent.....	4	7
6 to 7 percent.....	2	1	12 to 13 percent.....	1	8
7 to 8 percent.....	1	0	13 to 14 percent.....	0	4
8 to 9 percent.....	10	4	14 to 15 percent.....	0	1
9 to 10 percent.....	9	1	15 to 16 percent.....	1	0
10 to 11 percent.....	6	6	16 to 17 percent.....	0	1

Only in 5 years out of 36, was the rate indicated by recorded net income between 5 and 8 percent. In all the other years, it was more than 8 percent. There were 10 years in which the rate of return was between 8 and 9 percent; 9 years when it was between 9 and 10 percent;

6 years when it was between 10 and 11 percent; 4 years when it was between 11 and 12 percent; 1 year when it was between 12 and 13 percent; and another year, 1927, when it was between 15 and 16 percent.

A still more favorable picture appears in an examination of Bell Telephone System net income available to common stock of the American Co., calculated upon average par value and premium of American Co. stock. In 27 out of the 36 years this was over 10 percent. In 14 years, it was over 12 percent.

Income on Common Stock Equity.

In the foregoing pages of this chapter, earnings have been discussed in their relation to gross and net investments, and net income has been related to par value of common stock, and to the capital paid into the company's treasury by the stockholders (par value of common stock plus premium). Since it became the top company of the Bell System, as a result of the consolidation effected as of December 30, 1899, the American Co. has paid dividends continuously, ranging from \$7.50 per share for the years 1900 to 1905, inclusive, \$7.75 in 1906, \$8 in the years 1907 to 1920, inclusive, \$8.75 in 1921, and \$9 per share annually thereafter. The company's recorded net income was consistently in excess of the requirements for these dividend payments to the end of 1931, when undistributed profits which had been retained in the business aggregated some \$390,000,000. During the depression years, 1932 to 1935, inclusive, dividend payments exceeded net income by approximately \$141,000,000, thereby reducing the undistributed profits to approximately \$249,000,000 at the end of 1935. In 1936 and 1937, net income again exceeded the dividend requirements, but fell below the requirements in 1938. For these 3 years combined, the recorded net income aggregated \$507,089,257 as compared with dividend payments of \$504,443,231.

The funds equal to undistributed profits retained in the business from year to year, represented largely by the changes in the company's surplus, were employed to produce earnings as well as the funds obtained from the issuance of capital stock and bonds. Such undistributed profits also increased the total equity of the stockholders by a corresponding amount, over the amount paid into the company's treasury for the capital stock issued. Accordingly, in table 88, the net income on the three bases of computation previously described, is related to the average stockholder's equity for the years 1900 to 1935, inclusive, as reflected in the company's books.

During the 36-year period ending with 1935 the ratio of recorded net income to average stockholder's equity varied from a low of 4.97 percent in 1934 to a high of 12.78 percent in 1927, whereas Bell Telephone System net income available varied from 4.60 percent in 1933 to 14.31 percent in 1927. If the special dividend of approximately \$48,000,000 received from Western Electric in 1927 is disregarded, the highest ratios of the net income, on the two bases of computation, to the average stockholder's equity occurred in 1926, when they were 9.74 and 11.62 percent, respectively. Only during the 4 depression years, 1932-35, did the net income fall below 6 percent of the average stockholder's equity. For the entire 36 years recorded net income was less than 6 percent of the average stockholder's equity in 4 years, between 6 and 7 percent in 3 years, between 7 and 8 percent in 13 years, between 8 and 9 percent in 6 years, and over 9 percent in 10

years. Bell Telephone System net income available was below 6 percent of the average stockholder's equity in 4 years, and exceeded 7 percent in 32 years, was over 8 percent in 28 years, exceeded 9 percent in 23 years, and was more than 10 percent in 12 years.

In this connection it should be stated that the latter percentages are somewhat overstated, since the average stockholders' equity would be higher than shown in table 88 if the American Co.'s equity in undistributed profits of the Associated Telephone companies were taken into consideration. For example, for the year 1935 the average equity of the American Co.'s stockholders on a Bell System consolidated basis was approximately \$2,513,000,000 as compared with \$2,404,479,544 shown in table 88. On the basis of considering the higher equity figure, the ratios of Bell System net income and total net income available for 1935 would be 5.19 and 5.28 percent, respectively, instead of 5.42 and 5.52 percent, as shown in table 88.

TABLE 88.—Average par value of capital stock outstanding plus average premium and surplus, or average common-stock holder's equity, and percentage relationship to common-stock holder's equity of recorded net income, Bell Telephone System net income, and total net income available of American Telephone & Telegraph Co. for years 1900 to 1935, inclusive

Year	Average par value of capital stock outstanding plus premiums per books ¹	Average surplus per books ²	Average common-stock holder's equity per books	Percentage relationship of net income to stockholder's equity ³		
				Recorded net income	Bell Telephone System net income available	Total net income available ⁴
(a)	(b)	(c)	(d=b+c)	(e)	(f)	(g)
				Percent	Percent	Percent
1900	\$54,381,300	\$13,095,476	\$73,476,776	6.53	9.10	
1901	67,340,658	18,900,889	86,241,547	7.56	10.02	
1902	87,814,329	22,716,887	110,531,216	7.78	9.97	
1903	114,962,541	27,045,172	141,997,713	8.01	9.58	
1904	130,685,441	28,723,255	159,408,696	6.71	8.54	
1905	131,581,941	30,175,242	161,757,183	7.67	9.92	
1906	131,581,941	31,345,180	162,927,130	7.68	9.64	
1907	136,825,141	29,434,946	166,260,087	9.18	11.52	
1908	155,778,176	30,919,376	186,697,552	9.17	11.31	
1909	225,801,679	41,767,947	267,569,626	8.26	10.66	
1910	268,517,088	51,625,524	338,142,612	7.60	9.59	
1911	307,359,913	54,448,392	361,808,295	7.32	8.91	
1912	358,074,785	55,096,681	413,171,466	7.76	9.55	
1913	377,712,675	54,045,957	431,758,632	7.62	8.97	
1914	380,501,045	48,919,203	429,420,248	7.53	8.73	
1915	403,156,839	45,608,118	448,764,957	7.71	9.78	
1916	433,585,136	47,032,374	480,617,510	7.91	10.90	
1917	452,207,355	50,599,361	502,806,716	7.66	9.11	
1918	487,437,573	55,501,409	542,938,982	8.09	7.71	
1919	489,804,106	50,282,148	549,086,254	8.09	7.44	
1920	490,135,581	60,788,653	559,924,234	9.26	7.36	
1921	535,379,177	85,294,218	620,643,395	8.70	9.77	
1922	644,847,595	96,804,730	741,742,325	8.52	10.45	10.57
1923	772,275,369	108,083,235	880,358,604	9.28	10.32	10.64
1924	858,330,488	123,878,902	982,209,390	9.27	9.77	10.08
1925	965,429,220	141,923,339	1,107,352,559	9.70	11.18	12.19
1926	1,034,567,795	166,655,010	1,201,222,805	9.74	11.62	12.34
1927	1,151,587,279	229,841,951	1,381,429,230	12.78	14.31	11.92
1928	1,245,791,105	296,170,838	1,541,961,943	9.28	11.23	12.18
1929	1,379,213,097	340,719,923	1,719,933,020	9.66	11.54	12.09
1930	1,749,903,112	376,372,736	2,126,275,848	7.70	8.59	8.24
1931	2,105,726,193	398,596,142	2,494,392,335	6.68	7.02	6.95
1932	2,134,821,131	379,086,779	2,513,907,910	5.80	4.92	4.43
1933	2,134,976,578	352,478,533	2,487,455,111	5.53	4.60	4.03
1934	2,134,976,578	313,972,047	2,448,948,625	4.97	4.87	4.51
1935	2,134,976,578	299,502,966	2,404,479,544	5.23	5.42	5.52

¹ See table 87, column (d).

² Average of opening and closing balances for each year, including reserve for contingencies.

³ For amounts of net income and income available see table 87, columns (e), (f), and (g).

⁴ Complete data not available prior to 1922.

⁵ Includes special dividend of \$47,938,865 received from Western Electric Co., Inc.

Source: Exhibit 1360-B, tables 90 and 91, pp. 442 and 444, and schedule 2.

In evaluating the profits on the basis of their relationship to the stockholders' equity, consideration must be given to the dividend record of the company or companies involved. The ratio of profits to stockholders' equity of a company that has paid little or no dividends, and has retained substantially all of its profits in the business, presents a far different situation from that of the American Co. and its predecessor, American Bell, which have paid substantial and continuous dividends since 1880, and their profits ratios must be judged accordingly.

Special distributions to stockholders.—The foregoing discussions have already indicated the favorable treatment of their stockholders by American Bell and American Co. through the continuous payment of large dividends. In addition to these dividends, the stockholders of those two companies have received privileges which, in effect, were of the nature of special distributions. Usually, these took the form of stock split-ups, or rights to subscribe for new stock at par, when the market price was considerably above par.

In 1880, American Bell issued \$5,100,000 par value of its capital stock in connection with the acquisition by it of the net assets of National Bell. At that time, the outstanding capital stock of National Bell was \$850,000 par value, thus indicating the issuance of six shares of American Bell stock for each outstanding share of its predecessor. This six-for-one exchange was reflected principally in the write-up of over \$5,000,000 in patents and patent rights.

In connection with the consolidation as of December 30, 1899, by which the American Co. became the top company of the Bell System, \$51,772,600 par value of its capital stock was issued in exchange for \$25,886,300 par value of the then outstanding capital stock of the American Bell, the effect of which was in the nature of a declaration of a stock dividend of 100 percent, inasmuch as the transaction resulted in capitalizing \$25,886,300 of accumulated surplus of American Bell.

The American Co., as well as the associated Bell Telephone companies, showed a remarkable growth since the year 1900, more particularly during the years from 1920 to 1931. The major part of this expansion by the associated companies was financed through the sale of common stock to the American Co. which, in turn, offered its own stock to stockholders at par when the actual market value of this stock was considerably over par. Inasmuch as this financial policy permitted stockholders to invest additional funds to yield a return of 7½ to 9 percent, depending upon the rate of dividends being paid, or to immediately obtain substantial amounts of cash from the sale of the subscription rights, the granting of those rights might logically be considered in the nature of an additional form of income distribution, which is not reflected in the income statements of the company.

Table 89 shows the approximate number of rights exercised by stockholders in the purchase of American Co. stock at par, the average book value; the average market quotations on these rights since 1900, and the value thereof computed on the basis of average quotation, as an indication of their approximate value to stockholders during this period.

TABLE 89.—*Value of stock subscriptions exercised by stockholders on basis of average book and average market quotations from such rights, years 1900 to 1935, inclusive*

Year	Number of shares subscribed	Basis of offer	Approximate number of subscription rights exercised by stockholders	Approximate average book value of rights ¹	Approximate value of rights based on average book value	Average market value of rights ²	Value of rights based on average market value
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)
1900.....	1 102, 972	1 for 5	514, 860	\$6. 66	\$3, 428, 968	\$7. 75	\$3, 990, 165
1901.....	1 206, 120	1 for 3	618, 360	7. 02	4, 340, 887	16. 62	10, 277, 143
1902.....	1 218, 748	1 for 4	874, 992	5. 18	4, 532, 459	14. 85	12, 993, 631
1903.....	1 218, 320	1 for 5	1, 091, 600	3. 93	4, 289, 998	5. 83	6, 364, 028
1907.....	209, 738	1 for 6	1, 258, 428	3. 08	3, 875, 958	. 47	591, 461
1911.....	548, 536	1 for 5	2, 742, 680	5. 09	13, 960, 241	6. 80	17, 278, 984
1916.....	391, 341	1 for 10	3, 913, 410	2. 14	8, 374, 697	2. 01	7, 865, 954
1921.....	837, 902	1 for 5	4, 189, 510	4. 60	19, 271, 746	. 56	2, 346, 126
1922.....	1, 172, 039	1 for 5	5, 860, 195	4. 15	24, 319, 809	3. 70	21, 682, 722
1924.....	1, 491, 748	1 for 5	7, 458, 740	3. 66	27, 298, 988	3. 70	27, 597, 338
1926.....	1, 525, 542	1 for 6	9, 153, 252	3. 24	29, 656, 536	6. 25	57, 207, 825
1928.....	1, 852, 035	1 for 6	11, 112, 210	4. 34	48, 226, 991	12. 46	138, 458, 137
1930.....	2, 575, 879	1 for 6	15, 455, 274	4. 87	75, 267, 184	19. 12	295, 504, 839
Total.....	11, 350, 920	.....	64, 243, 511	.....	260, 844, 452	.....	602, 158, 253

¹ Does not include 219 shares included by company in number of shares subscribed under circular offers, which, however, were really sold at a premium, since the rights to them were acquired by the company during the years 1900 through 1903 and were sold at a total of \$4,537.

² Represents book value per share, less par value, divided by ratio of offer plus one, e. g., 1900 average book value per share $\$139.95 - \$100 = \$39.95 \div (5+1) = \6.66 .

³ Average of the total high and low market quotations (total highs plus total lows divided by the sum of the number of high and low quotations).

Source: Exhibit 1360-B, p. 374. Also see table 71, p. 629.

If all of the stock subscription rights had been sold at the average market value according to table 89 the estimated benefit to stockholders would have amounted to \$602,158,253, consisting approximately of a transfer and sale of undistributed equities of \$266,844,452 and net profits of \$335,313,801. The American Co. also financed a part of its requirements by the issuance of \$219,112,700, face value, of convertible bonds offered to stockholders as of July 1, 1929.¹⁷ These bonds were convertible into common stock at 180 within 6 months after date of issue, the conversion rate being subject to adjustment in case additional stock was offered at par in the meantime. Most of these bonds, \$206,189,700, face value, were converted during 1930, when the common stock of the American Co. was selling at an open market price considerably in excess of \$200. Therefore, this arrangement also operated as a special distribution of income to stockholders, in addition to the regular dividend payments shown in the company's income statements.¹⁸

¹⁷ Stockholders were also offered \$67,000,000 and \$48,367,200, face value, of convertible bonds in 1913 and 1918, respectively.

¹⁸ Many of the stockholders in 1929 sold their convertible-bond subscription rights. As the market quotations on these rights ranged from \$3 to \$8 each, these bond subscription rights had a possible minimum cash value of \$39,440,286 to the stockholders.

SECTION 2. EARNINGS OF THE BELL TELEPHONE SYSTEM

The foregoing discussion has been confined to the nature and sources of the revenues of the parent companies of the Bell System, the disposition of the revenues received, and to various bases of measurement of the net earnings and net income. Before proceeding with a discussion of the earnings of the respective main functional divisions of the Bell System which are engaged in furnishing telephone communications services, it is considered appropriate to first present an over-all picture of the earnings of the Bell Telephone System. For this purpose the net operating earnings of the system, as reflected in consolidated income statements of the American Co. and the associated Telephone companies, are related to the average gross book cost and the average net book cost of telephone plant and equipment of the same companies, on the basis of averaging the balances in the telephone plant and equipment accounts (including intangibles but excluding construction work in progress) at the beginning and end of each year. These data are contained in table 90. Inasmuch as the first uniform system of accounts for telephone companies, as prescribed by the Interstate Commerce Commission, did not become effective until January 1, 1913, this information is presented in table 90 for only the years 1913-35, inclusive.

TABLE 90.—*Computation of rate of return on average gross and average net book cost of telephone plant and equipment of the Bell System, years 1913-35, inclusive*

Year ended Dec. 31	Average gross book cost of plant ¹	Average de- preciation and amortization reserves ¹	Average net book cost of plant ¹ ((d) = (b) - (c))	Net tele- phone earn- ings of Bell System ²	Percent return on—	
					Average gross book cost ((f) = (e) ÷ (b))	Average net book cost ((g) = (e) ÷ (d))
(a)	(b)	(c)	(d)	(e)	(f)	(g)
1913.....	\$783,463,046	\$99,136,569	\$684,326,477	\$51,195,375	6.53	7.48
1914.....	837,781,794	114,023,617	723,758,177	51,809,688	6.18	7.16
1915.....	883,574,603	132,322,411	751,252,192	58,725,708	6.65	7.61
1916.....	932,593,486	155,175,456	777,418,030	67,515,012	7.24	8.68
1917.....	1,019,753,110	184,566,820	835,186,290	63,155,012	6.19	7.30
1918.....	1,120,598,382	218,242,652	902,355,730	53,642,115	5.23	6.90
1919.....	1,205,611,263	255,849,815	949,761,448	63,944,105	5.30	6.73
1920.....	1,309,158,673	292,930,341	1,016,228,332	65,778,036	5.02	6.47
1921.....	1,451,786,813	330,909,163	1,121,687,650	68,429,768	6.09	7.88
1922.....	1,614,893,298	372,969,506	1,241,923,792	104,920,828	6.50	8.45
1923.....	1,822,328,072	419,213,392	1,403,114,680	115,551,708	6.34	8.24
1924.....	2,096,094,386	464,395,385	1,634,699,001	127,923,875	6.09	7.83
1925.....	2,387,010,353	507,866,052	1,879,144,301	162,365,998	6.80	8.64
1926.....	2,690,216,281	553,143,306	2,107,072,975	153,254,108	6.89	8.70
1927.....	2,915,110,002	588,439,613	2,326,670,389	194,461,151	6.67	8.36
1928.....	3,161,418,148	625,642,489	2,535,775,659	214,829,243	6.80	8.47
1929.....	3,474,878,742	674,828,006	2,800,050,736	232,336,762	6.69	8.30
1930.....	3,843,315,564	719,520,275	3,123,795,289	219,848,886	5.72	7.04
1931.....	4,107,045,765	764,295,940	3,342,750,825	221,318,536	5.39	6.62
1932.....	4,209,942,026	804,390,444	3,405,551,582	176,704,480	4.20	5.19
1933.....	4,217,499,842	856,038,790	3,361,461,062	170,874,273	4.05	5.08
1934.....	4,208,489,674	930,045,321	3,278,444,353	178,994,813	4.25	5.46
1935.....	4,228,367,416	1,014,932,041	3,213,435,375	187,017,911	4.42	5.82
Averages:						
1913-22.....					6.04	7.49
1923-31.....					6.32	7.90
1931-35.....					4.23	5.38
1913-35.....					5.61	7.05

¹ Averages are based upon annual opening and closing balances; and gross and net plant include all intangible accounts, exclude construction work in progress, and include no allowance for working capital.

² Net operating earnings as reflected in consolidated income statements of American Telephone & Telegraph Co. and associated telephone companies.

Source: Exhibit 135, p. 14; exhibit 1364, schedules A-2, A-4, and A-15; exhibit 1360-B, schedules 22 and 35; and Bell Telephone System earnings data compiled by American Telephone & Telegraph Co.

During the 4 depression years, 1932-35, annual net telephone earnings varied from 4.05 to 4.42 percent of the average gross book cost of plant; in 5 of the 23 years indicated in table 90 such earnings were between 5.02 and 5.72 percent of gross plant; in 13 years they were between 6.09 and 6.89 percent; and in 1 year, over 7 percent. The average annual earnings for the 23 years were 5.61 percent of the average gross book cost of telephone plant and equipment. These percentages, however, are not particularly significant, since they reflect the relationship of net telephone earnings to the average gross book cost of plant, whereas a substantial part of the initial investment in telephone plant and equipment still in service during the respective years had already been absorbed in the cost of furnishing telephone service through periodic depreciation charges and credits to depreciation reserves. If the companies' annual depreciation rates have been correct, then the balances in the depreciation reserves at any selected date represent the portion of the gross book cost of the telephone plant and equipment as of the same date which has already been absorbed in rendering telephone service. Thus, the ratio of net telephone earnings to the net book cost of telephone plant and equipment in service (gross book cost less depreciation and amortization reserves) is much more significant as an indication of the rate of return earned by the companies on their actual investment in telephone plant and equipment in any year or period of years.

During the 23-year period, net telephone earnings of the Bell Telephone System exceeded 8 percent of the average net book cost of plant in 8 years, were between 7 and 8 percent for 7 years, between 6 and 7 percent in 4 years, and under 6 percent (but not below 5 percent) in only 4 years. The annual average for the entire 23 years was 7.05 percent. In this connection, however, it should be borne in mind that neither gross book cost nor net book cost include any allowance for working capital. On the other hand, the net telephone earnings of the Bell System, as shown in table 90, represent the consolidated net operating earnings, after deducting all expenses and taxes, exclusive of interest deductions, of the American Co.'s general department, except certain taxes directly applicable to the dividends received by that company on its investment in capital stock of the Bell Telephone Co. of Canada and certain minor items charged against nonoperating income. All holding-company expenses are included in the consolidated telephone operating expenses, for the purpose of determining the consolidated net telephone earnings of the system, in accordance with the practice followed by the American Co. in compiling its published consolidated financial statements for 1935 and prior years.

To analyze further the sources of American Co. earnings, it is necessary to consider the record of earnings of the long lines department, associated telephone companies, and Western Electric Co. To these the discussion in the following pages is devoted, in the order named.

SECTION 3. EARNINGS OF LONG LINES DEPARTMENT¹⁹

The long lines department of the American Telephone & Telegraph Co. is not a corporate entity, but is treated as a separate operating unit of the Bell System. It maintains its own set of books and records. As mentioned in other chapters of this report, its business is actually transacted through the long lines department and 30 subsidiary corporations, sometimes referred to as "State leasing companies." These companies were organized principally to comply with legal requirements incident to constructing, owning, and operating utility property in various States and are not to be confused with the associated telephone companies of the Bell System. Long lines' general books carry as investments the capital stocks of these companies and advances made for construction purposes. Such investment aggregated \$267,722,212 as of December 31, 1935.²⁰ The books of each of the State companies show the investment in telephone plant and the offsetting items for capital stock issued to, and the advances from, the American Co.'s long lines department. The State companies have contracts with the American Co. which specify that the latter shall receive all revenues and pay all expenses. Accordingly, no revenues or expenses appear on the books of the State companies. All records are maintained by the long lines department, as the State companies have no employees and are created only to satisfy legal requirements. Reference in this report to long lines department or long lines is meant to comprehend the long lines department of the American Co. and the 30 State subsidiaries.

From the date of its organization in 1885 until 1900 the principal transactions of the American Co. related to its activities in the long-distance telephone field as of December 30, 1899; it also took over the holding-company and license-contract functions of its parent company, American Bell, and thereby became the top company of the Bell System. The establishment of complete and separate accounting records for the long lines department, as distinct from those covering the transactions relating to the company's holding-company and license-contract functions as recorded in the records of the general department, was not effected until 1908. The data on long lines' activities for 1907 and prior years, as presented in this report and the supporting exhibits, have been compiled from the available records on a basis as nearly comparable as possible with the corresponding information for subsequent years.

Total Revenues.

For the period 1880 to the end of 1935, net income of the long lines department aggregated approximately \$454,000,000, after deducting license fees paid to the general department, or more than 13¼ percent of the total revenues of the general department. From 1880 to 1900, long lines' net income amounted to slightly more than \$4,000,000, or 6 percent of total general department revenues for the period; for the 36 years ending with 1935, it represented 13.78 percent, and in the years 1935 and 1936 it was 13.42 and 14.58 percent, respectively. In addition, license fees charged against long lines' operations for the 36 years ending with 1935 amounted to approximately \$27,000,000,

¹⁹ For a further description of the history, functions, and policies of long lines, see ch. 12.

²⁰ Source: Prospectus of American Telephone & Telegraph Co.'s 25-year 3¼ percent debentures, dated October 15, 1936.

or 0.82 percent of total general department revenues, and in 1935 and 1936 they were 0.70 and 0.76 percent, respectively, thus bringing the long lines' contribution to general department revenues to over 14½ percent of that department's total revenues for the 36 years 1900 to 1935, inclusive, 14.12 percent for 1935, and 15.34 percent in 1936. The foregoing percentages give a general indication of the relative importance of the American Co.'s long lines department with respect to the latter's contribution to the total revenues of the general department. Inasmuch as the remaining general department revenues principally consist of dividends, interest, and license fees from the associated telephone companies and dividends from Western Electric, but do not include the American Co.'s equity in undistributed profits of those companies, the foregoing percentages do slightly overemphasize the relative importance of the long lines department on the basis of its earnings contribution to the Bell System.

A brief analysis of the operating results of the long lines department, from January 1, 1913, the effective date of the first uniform system of accounts, as prescribed by the Interstate Commerce Commission, to December 31, 1935, follows, with occasional reference to data relating to later years.²¹

Sources of long lines revenues.—The total revenues of the long lines department increased from \$12,041,349 in 1913 to \$99,776,290 in 1930, then declined to \$75,885,031 in 1933. In 1935 the total revenues had increased to \$82,387,072, and in 1937 they were \$92,820,777, in spite of the \$12,000,000 toll-rate reduction obtained by the Federal Communications Commission, effective January 15, 1937. During the whole period of 25 years, message toll service produced between 70 and 77 percent of all long lines revenues, with the exception of the years 1930–33, inclusive, when message toll revenues were less than 70 percent of total revenues, because the decline in message toll business was proportionately greater than that of other kinds of long lines service. On the other hand, toll private line service, which consists principally of private-line telephone, radio transmission, telegraph, and teletypewriter services, supplied between 20 and 26 percent of the total revenues during the period 1913–35, inclusive. Other miscellaneous services provided the remainder. Table 91 gives the annual revenues by major services.

²¹ For purposes of this section, this discussion is limited to the period from January 1, 1913, because the figures for the prior years are not on a comparable basis. This was corrected in 1913 by the institution of the uniform system of accounts for telephone companies by the Interstate Commerce Commission.

TABLE 91.—Composition of operating revenues of long lines department, years 1913 to 1935, inclusive

Year	Total	Toll service				Miscellaneous	
		Message toll service	Toll private line service	Other toll service ¹	Total	Rent	Other ²
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)
1913.....	\$12,041,349	\$5,907,393	\$2,774,266	\$50,133	\$11,731,792	\$241,361	\$68,196
1914.....	12,144,296	9,133,756	2,691,030	53,505	11,878,351	199,581	66,364
1915.....	14,029,918	10,784,116	2,893,948	33,341	13,711,405	240,094	78,419
1916.....	17,444,529	13,073,036	3,896,757	34,355	17,004,148	262,002	178,379
1917.....	20,543,543	15,491,881	4,300,753	56,525	19,849,159	491,286	203,096
1918.....	23,386,703	17,821,723	4,676,850	49,293	22,557,866	607,278	221,559
1919.....	31,708,692	24,294,895	6,347,703	64,538	30,707,136	765,721	235,835
1920.....	38,417,770	29,318,088	8,141,733	51,286	37,511,107	675,318	231,345
1921.....	38,335,982	28,437,404	8,822,984	4,533	37,264,921	832,847	238,214
1922.....	43,715,945	33,027,378	9,480,950	3,504	42,511,832	983,907	220,206
1923.....	47,539,731	36,129,600	10,199,693	93,586	46,422,879	945,689	171,163
1924.....	48,709,928	36,355,116	10,376,365	99,687	46,831,168	1,717,526	161,234
1925.....	55,651,121	40,859,653	12,334,965	122,488	53,317,106	2,122,801	214,214
1926.....	61,172,979	43,206,941	15,006,945	132,924	58,346,810	2,732,818	93,351
1927.....	67,615,517	46,678,035	17,044,412	190,861	63,913,308	3,592,768	109,441
1928.....	83,130,897	58,769,659	20,496,335	186,713	79,452,707	3,586,256	121,932
1929.....	97,635,359	68,703,270	24,599,610	194,851	93,497,731	4,000,812	136,816
1930.....	99,776,290	68,601,594	25,664,577	190,292	94,456,463	5,276,264	93,563
1931.....	94,830,600	65,578,736	23,424,729	197,891	89,201,356	5,495,341	133,903
1932.....	76,267,134	50,750,822	19,991,187	221,096	70,963,105	5,132,384	171,645
1933.....	75,885,031	52,708,154	18,122,966	173,395	71,004,515	4,728,319	152,197
1934.....	78,336,250	56,264,350	17,824,263	205,774	74,294,387	3,877,001	164,862
1935.....	82,387,072	60,338,435	17,727,960	368,755	78,435,150	3,756,269	195,653
Total.....	1,220,709,636	875,244,035	286,840,981	2,779,386	1,164,864,402	52,183,645	3,061,589

¹ Includes telegraph tolls 1913 to 1916, inclusive.² Includes exchange revenues 1913 to 1916, inclusive.

Source: Exhibit 135, table 5, p. 29.

The following tabulation summarizes the operating results of the period 1913 to 1935, inclusive:

Item	Period 1913 to 1935	
	Amount	Percent of revenue
Operating revenues:		
Message toll.....	\$875,244,035	71.70
Toll, private line.....	286,840,981	23.50
Other toll.....	2,779,386	.23
Total toll service.....	1,164,864,402	95.43
Miscellaneous revenues.....	55,845,234	4.57
Total operating revenues.....	1,220,709,636	100.00
Operating expenses:		
Maintenance.....	173,795,559	14.24
Depreciation.....	196,205,390	16.07
Other.....	450,290,520	36.89
Total operating expenses.....	820,291,469	67.20
Net telephone earnings.....	400,418,167	32.80
Return on average gross plant in service.....		9.10
Return on average net plant in service.....		10.92

From 1913 to 1935, inclusive, the total operating revenues of the long lines department were \$1,220,709,636. Of this amount, \$875,-244,035, or 71.70 percent, were revenues from message toll business. An additional \$286,840,981, or 23.50 percent of the total, was from toll private-line business.²² The total operating expenses for this period amounted to \$820,291,469, or 67.20 percent of the total revenues.²³ This left net operating earnings of \$400,418,167, or 32.80 percent of the total revenues of the long lines department.

Rate of Return.

The net revenue of long lines department from 1913 to 1935, inclusive, gave a rate of return on average gross plant in service of 9.10 percent, and on average net plant in service, 10.92 percent. These percentages, however, are affected by the severe decline in revenues occurring during the years 1931 to 1935, inclusive. Excluding this period, the earnings averaged over 15 percent annually on the net plant investment.²⁴ In appraising these figures, it must be kept in mind that no allowance has been made for working capital. To this extent, the percentages and other indices of profits are slightly overstated. But the difference that the inclusion of working capital would make is very slight, and for purposes of historical comparisons the rate of return on gross and net book cost may be taken as indicative of long lines results.

The year-by-year record of long lines' earnings, as shown in table 92, indicates that during certain periods, particularly from 1919 to 1929, the net telephone earnings upon both gross and net book cost of plant have been well above the averages for the whole 23-year period. In 1920, for example, the return on net book cost of plant was 22.29 percent. During the 11-year period 1919 to 1929, the rate of return on gross book cost averaged 14.1 percent, and on net book cost 17.07 percent. These results are partly attributable to the fact that the Bell System obtained an increase of about 20 percent in long-distance rates effective January 21, 1919, by order of the Postmaster General of the United States, while under Government control, upon representation that increased operating costs due to wartime conditions were endangering service, although ratios of net telephone income to gross and net book cost of plant in 1918 were 12.08 and 14.38 percent, respectively. As a result of the increased rates, the corresponding rates of income in 1919 were 16.36 and 19.74 percent, respectively.²⁵

²² The toll private-line service consisted principally of private-line toll telephone service (\$42,830,954), program transmission service (\$28,214,357), telegraph service (\$161,716,020), and teletypewriter service (\$64,079,650). Miscellaneous revenues consisted principally of rent revenues. These miscellaneous revenues accounted for \$55,845,234, or 4.57 percent of the total operating revenues for long lines from 1913 to 1935, inclusive.

²³ Expenses consisted of maintenance, \$173,795,559, or 14.24 percent; depreciation, \$196,205,390, or 16.07 percent; and other expenses, including traffic, operating rents, taxes, and miscellaneous expenses, \$450,-290,520 or 36.89 percent. See exhibit 135, schedule 26.

²⁴ These statements are based on net telephone earnings and investment in fixed capital, as shown in table 92, without adjustment of the company's recorded figures other than reclassification of certain minor items as detailed in exhibit 135, schedules 23 and 26. Net book cost of long lines plant has been taken as the gross book cost of plant in service less the book balances of the depreciation and amortization reserves. Average plant figures represent the arithmetic mean of opening and closing yearly balances of telephone plant accounts, including general equipment but excluding construction work in progress.

²⁵ See exhibit 2096-A, ch. V; also exhibit 2096-B, pp. 62-129.

The rate of return on average gross and net book cost of plant for the period 1914 to 1935, inclusive, and by the intermediate periods indicated, is given below:

Percent of return on average long lines plant in service

Period	Gross book cost	Gross book cost less depreciation reserve
	<i>Percent</i>	<i>Percent</i>
1914-20	14.80	17.80
1921-25	15.77	19.21
1926-30	11.17	13.34
1931-35	4.96	6.98
1914-35	9.07	10.90

In 1931 and 1932 there was a serious decline in income as a result of adverse business conditions. The rate of return declined even more than the net telephone earnings of long lines department, because of the continual increase in plant investment. Plant investment has increased from \$282,000,000 at the end of 1929 to \$429,000,000 at the end of 1932, whereas net earnings declined from \$32,000,000 in 1929 to \$15,000,000 in 1932; but the trend of income since 1932 has been definitely upward, the net earnings being \$23,000,000 in 1935. Therefore, decreased rate of return on gross and net plant for these depression years, as indicated in table 92, must be explained not only in terms of reduced earnings but in terms of increased plant investment. With increased utilization of plant, more favorable results may be expected. This is borne out by the results of operations during 1937. The net income in that year was almost \$25,000,000, in spite of a reduction of rates effective January 15, 1937, aggregating \$12,000,000 a year.

In summary, the factors that have contributed to the unusual earnings record of the long lines department of the American Co. may be enumerated as follows:

1. Increase in the number of telephone subscribers and telephone stations in service which are the sources of originating toll calls on which the long lines department depends for its revenues.
2. Development in the art of long-distance voice transmission and increased efficiency in system operation which made possible telephone service on a transcontinental basis and permitted the interconnection of all large urban centers.
3. Intensive national advertising and subscribers' education regarding utilization of long-distance services.
4. Development of new services, such as teletypewriter, radio program transmission, transoceanic telephone, and telephotograph service.
5. Increase of telephone long-distance rates, as of January 21, 1919, during the period of wartime Government control, by general order of Postmaster General Albert S. Burleson at the insistence of the telephone company officials, at a time when the long lines department was already earning a substantial return.
6. Absence of effective Federal regulation of interstate long-distance telephone service until recently.

CHART 13

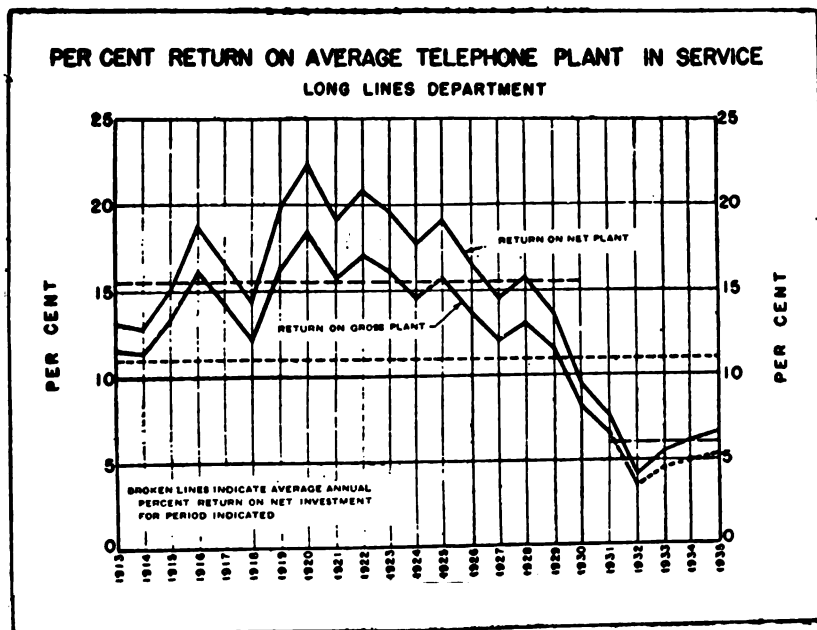


TABLE 92.—Telephone plant and return—long lines department, years 1913 to 1935, inclusive

Year (a)	Average tele- phone plant gross book cost ¹ (b)	Average de- preciation reserve (c)	Average tele- phone plant net book cost ¹ (d)	Net tele- phone ear- nings (e)	Percent return on—	
					Gross book cost (f)	Net book cost (g)
1913	\$47,871,923	\$5,273,831	\$42,598,092	\$5,541,378	11.58	13.01
1914	48,918,491	5,661,279	43,257,212	5,527,555	11.30	12.78
1915	49,284,120	6,274,139	43,009,981	6,530,916	13.25	15.18
1916	50,353,759	7,069,148	43,284,611	8,107,147	16.10	18.73
1917	55,593,451	8,534,936	47,058,515	7,851,210	14.12	16.68
1918	64,881,258	10,391,497	54,489,761	7,834,721	12.08	14.38
1919	73,769,305	12,638,689	61,130,616	12,068,977	16.36	19.74
1920	81,901,604	14,820,704	67,080,900	14,954,188	18.26	22.29
1921	91,518,627	16,363,172	75,155,455	14,437,728	15.78	19.21
1922	100,903,232	18,094,132	82,809,100	17,248,824	17.09	20.83
1923	111,925,345	20,465,143	91,460,202	17,979,630	16.06	19.66
1924	126,476,640	22,924,736	103,551,904	18,314,694	14.48	17.69
1925	141,416,129	24,871,264	116,544,865	22,237,453	15.72	19.08
1926	161,485,883	28,009,842	133,476,041	22,158,827	13.72	16.60
1927	188,592,115	32,330,495	156,261,620	22,664,376	12.02	14.50
1928	223,582,024	37,908,667	185,673,357	29,187,459	13.05	15.72
1929	281,906,945	45,415,387	236,491,558	32,339,490	11.47	13.67
1930	357,714,168	53,470,454	304,243,714	29,202,362	8.16	9.60
1931	409,347,333	60,643,380	348,703,953	26,501,240	6.47	7.60
1932	429,330,471	63,679,308	365,651,163	15,037,550	3.50	4.11
1933	435,951,820	69,743,559	366,208,261	20,191,664	4.63	5.51
1934	435,713,826	81,339,174	354,374,652	21,476,758	4.93	6.06
1935	433,340,470	90,612,354	342,728,116	23,024,020	5.31	6.72
Total	4,401,778,939	736,535,290	3,665,243,649	400,418,167	9.10	10.92

¹ Excluding construction work in progress.

Source: Exhibit 135, p. 14.

SECTION 4. PROFITS OF THE ASSOCIATED BELL TELEPHONE COMPANIES

The associated companies of the Bell System are today carrying on the major part of the telephone business of the United States. Although in the period 1894-1907, independent telephone companies constituted a serious threat to the dominance of the Bell System, after the accession of T. N. Vail to the presidency of American Telephone & Telegraph Co., a systematic policy of acquisition and expansion was instituted, and the Bell System soon emerged as the dominant factor in telephone communication. It has remained in that position unchallenged in the past three decades.²⁶ A major part of more than \$1,000,000,000 of total annual telephone revenues in the United States today goes to the Bell System. Since 1922, total telephone-operating revenues of the associated companies alone have been more than \$500,000,000 a year. In 1930, they had total telephone-operating revenues of some \$1,019,000,000. During the depression the total operating revenues declined to \$821,000,000 in 1933; since that time there has been a gradual recovery. For 1936 they were \$930,000,000 and in 1937 they aggregated \$989,000,000 or only \$30,000,000 less than in 1930. The American Telephone & Telegraph Co. is the owner of over 90 percent of the capital stock of the associated companies and, as such, it is the principal recipient of the net income resulting from their telephone business.

Total Revenues.

A summary of associated companies' telephone-operating revenues, expenses, interest payments, dividend payments, and surplus accumulations, from 1900 to 1935, inclusive, shows that during the 36-year period total telephone-operating revenues amounted to \$15,285,654,376, and total telephone expenses to \$12,345,314,313, leaving net telephone earnings of \$2,940,340,063. After giving effect to various operating and nonoperating additions and deductions, the net income for the period was \$2,315,526,562. During these years, interest payments amounted to \$836,256,801, and total dividend payments to \$2,070,280,788, leaving an earned surplus at the end of the period of \$245,245,774. There were certain surplus adjustments throughout the period, so that the actual amount of combined surplus shown on the books at the end of 1935 was \$152,092,982. The condensed income statements of associated Bell Telephone companies for the 36 years ended December 31, 1935, are summarized below:

Particulars and amount

Telephone-operating revenues.....	\$15, 285, 654, 376
Telephone-operating expenses.....	12, 345, 314, 313
Net telephone earnings.....	2, 940, 340, 063
Miscellaneous income (net).....	211, 443, 300
Total net earnings.....	3, 151, 783, 363
Interest deductions.....	836, 256, 801
Net income.....	2, 315, 526, 562
Deduct dividends paid.....	2, 070, 280, 788
Balance to surplus.....	245, 245, 774

Source: Exhibit 1364, schedule B-1.

²⁶ See ch. 5.

It was mentioned before that the associated Bell Telephone companies constituted the most important source of income for the general department of the American Telephone & Telegraph Co. Of the total dividends of \$2,070,000,000, paid by the associated Bell Telephone companies, from 1900 to 1935, inclusive, approximately \$1,743,000,000, or 84 percent, was received by American Telephone & Telegraph Co. on its investment in the stocks of those companies. In addition to these dividends, the American Co. also received other revenues from the associated telephone companies during the 36 years, as follows:

Particulars and approximate amounts

License fees-----	\$446, 000, 000
Interest-----	252, 000, 000
Total-----	698, 000, 000

In short, from 1900 to the end of 1935, American Telephone & Telegraph Co. received in dividends, license fees, and interest a total of \$2,441,000,000 from the associated companies. This was 74.87 percent of the total general-department revenues of \$3,260,000,000.²⁷

The conditions under which license fees were received by the American Co. were discussed in chapter 6. The interest revenues represent principally interest received on advances made to the associated companies. Dividends received upon common-stock investment in associated companies comprised the larger part of revenues from associated companies.

Return on American Telephone & Telegraph Co. Investment.

The American Co. has used most of its resources in acquiring common-stock investments in associated companies. At December 31, 1935, such investment had a recorded value of \$1,959,000,000 on the books of the American Co. This investment has yielded a steady return, comparatively free from risk, as shown by the rate of return of dividends received from associated companies from 1922 to 1935, inclusive, on average recorded investment (table 93). The lowest rate of return on average recorded investment in this 14-year period was 5.65 percent in 1934, and the highest was 7.58 percent in 1926. The average for the whole period was 6.85 percent. The comparative stability of the rate of return of dividends on the American Co.'s investment in associated companies' stocks is due, of course, to the control the management has over the payment of dividends by subsidiaries. The rates of return calculated on the basis of the American Co.'s equity in the net annual income of the associated companies vary considerably, as compared with those based on dividends, as shown in table 93, for the reason that net income varies more from year to year than dividends.²⁸

²⁷ See *supra*, table 78, p. 497.

²⁸ The level and comparative stability of associated-company dividends are shown in table 94, p. 533.

TABLE 93.—Average recorded investment of American Telephone & Telegraph Co. in common stock of Associated Bell Telephone companies and percentage relation of dividends received and of equity in net income of those companies to average recorded investment, years 1922 to 1935, inclusive

Year	Average recorded investment in common stock	Dividends received		Equity in net income of associated companies	
		Amount	Percent of average recorded investment	Amount	Percent of average recorded investment
(a)	(b)	(c)	(d)	(e)	(f)
1922.....	\$586,480,730	\$36,878,846	6.29	\$48,225,406	8.22
1923.....	653,011,400	43,833,155	6.71	52,976,892	8.11
1924.....	761,685,105	52,431,044	6.88	57,375,522	7.53
1925.....	887,726,949	63,282,773	7.13	79,705,079	8.98
1926.....	1,027,713,805	77,862,409	7.58	100,451,838	9.77
1927.....	1,189,133,083	85,820,372	7.22	107,013,096	9.00
1928.....	1,351,691,999	101,248,755	7.49	131,230,547	9.71
1929.....	1,472,489,809	109,359,490	7.43	141,653,705	9.62
1930.....	1,611,819,711	118,593,979	7.36	135,757,007	8.42
1931.....	1,794,625,507	134,200,290	7.48	142,710,845	7.95
1932.....	1,884,768,159	132,010,601	7.00	109,800,768	5.83
1933.....	1,911,232,758	122,656,969	6.42	99,541,329	5.21
1934.....	1,945,348,996	110,061,399	5.65	107,472,023	5.52
1935.....	1,957,798,717	116,029,842	5.93	120,568,917	6.16
Annual average.....	1,359,751,866	93,162,137	6.85	102,463,067	7.54

Source: Exhibit 1359, table 67, p. 200

TABLE 94.—Annual rates of dividends paid by Associated Bell Telephone companies on \$100 par value of common stock, years 1924 to 1934, inclusive

Item	Company (a)	1924 (b)	1925 (c)	1926 (d)	1927 (e)	1928 (f)	1929 (g)	1930 (h)	1931 (i)	1932 (j)	1933 (k)	1934 (l)	1935 (m)	1936 (n)	1937 (o)
1	New England Telephone & Telegraph Co.	Pct.	8	8	8	8	8	8	8	8	8	8	8	8	Pct.
2	The Southern New England Telephone Co.	8	8	8	8	8	8	8	8	8	8	8	8	8	8½
3	New York Telephone Co.	8	8	8	8	8	8	8	8	8	8	8	8	8	7½
4	New Jersey Bell Telephone Co.	8	8	8	8	8	8	8	8	8	8	8	8	8	8½
5	The Bell Telephone Co. of Pennsylvania.	8	8	8	8	8	8	8	8	8	8	8	8	8	8½
6	The Diamond State Telephone Co.	8	8	8	8	8	8	8	8	8	8	8	8	8	8
7	The Chesapeake & Potomac Telephone Co.	8	8	8	8	8	8	8	8	8	8	8	8	8	8
8	The Chesapeake & Potomac Telephone Co. of Baltimore City.	8	8	8	8	8	8	8	8	8	8	8	8	8	8½
9	The Chesapeake & Potomac Telephone Co. of Virginia.	7½	8	8	8	8	8	8	8	8	8	8	8	8	8½
10	The Chesapeake & Potomac Telephone Co. of West Virginia.	8	8	8	8	8	8	8	8	8	8	8	8	8	8
11	Southern Bell Telephone & Telegraph Co.	8	8	8	8	8	8	8	8	8	8	8	8	8	8
12	The Ohio Bell Telephone Co.	8	8	8	8	8	8	8	8	8	8	8	8	8	8
13	The Cincinnati & Suburban Bell Telephone Co.	8	8	8	8	8	8	8	8	8	8	8	8	8	8
14	Michigan Bell Telephone Co.	8	8	8	8	8	8	8	8	8	8	8	8	8	8
15	Indiana Bell Telephone Co.	8	8	8	8	8	8	8	8	8	8	8	8	8	8
16	Wisconsin Telephone Co.	8	8	8	8	8	8	8	8	8	8	8	8	8	8
17	Illinois Bell Telephone Co.	8	8	8	8	8	8	8	8	8	8	8	8	8	8
18	Northwestern Bell Telephone Co.	8	8	8	8	8	8	8	8	8	8	8	8	8	8
19	Southwestern Bell Telephone Co.	8	8	8	8	8	8	8	8	8	8	8	8	8	8
20	The Mountain States Telephone & Telegraph Co.	7	7	7½	8	8	8	8	8	8	8	8	8	8	8½
21	The Pacific Telephone & Telegraph Co.	8	8	8	8	8	8	8	8	8	8	8	8	8	8

Blanks indicate no dividends declared during year.

¹ Name changed from The Delaware & Atlantic Telegraph & Telephone Co. in 1927, and did not become a direct subsidiary and licensee of American Telephone & Telegraph Co. until March 1928 when the outstanding capital stock was purchased from New York Telephone Co., after the latter had sold its telephone properties located in Northern New Jersey to New Jersey Bell Telephone Co.

² Did not become a direct subsidiary and licensee of American Telephone & Telegraph Co. until December 1929 when the outstanding capital stock was purchased from the Bell Telephone Co. of Pennsylvania.

Source: Exhibit No. 1362 B to E, inclusive, for years 1924-35, Comptroller's Annual Report of American Telephone & Telegraph Co. for 1936, and Bell System monthly reports for 1937.

The lowest rate of return on the American Co.'s investment on the basis of equity in associated companies' net income was 5.21 percent in 1933; the highest rate, 9.77 percent in 1926. The average rate of return was 7.54 percent for the period 1922 to 1935, inclusive, in contrast with 6.85 percent when calculated on the basis of dividends. During the prosperous years 1922 through 1930, the rate earned on associated company common-stock investment was consistently over 8 or 9 percent, except in 1924, when it was 7.53 percent.

Associated Company Earnings on Investments.

The associated companies have made annual profits on paid-in capital that are higher than those indicated when calculated upon the basis of the American Co.'s investment. The reason for this, of course, is that during certain years the American Co. paid higher prices for some of the shares, when acquiring them from outsiders, than the paid-in capital per share. No calculation has been made for a series of years to indicate the earnings of associated companies on paid-in capital. However, a close approximation of the earnings on the amount of capital paid in by the stockholders is presented in the following analyses for the 2 years 1926 and 1935, respectively.

The rate of return of net telephone earnings on average gross book cost of plant in 1926, as shown in table 95, page 537, was 6.15 percent, and on average net book cost of plant, 7.75 percent. The associated companies have income from other sources as well as telephone operations, and they employ assets other than telephone plant. Therefore, in the following tabulation, the total net earnings before interest deductions are first related to average total assets, including gross book cost of telephone plant and equipment designated as average gross investment. Taking this as a starting point, the following analysis for 1926 shows the extent of leverage present in the cheaper ways of financing which have increased the rate of return on common stock by 75 percent over the rate of return on total investment of associated companies:

Particulars	Average gross investment and segregation by sources of financing ¹	Earnings on investment	
		Amount	Percent
Total for year 1926.....	\$2, 745, 855, 003	\$159, 469, 155	5.81
Deduct: Average amount financed with funds obtained from sources other than from sales of capital stock, represented by:			
Funded debt.....	521, 351, 248	27, 649, 367	5.30
Advances from American Co., other notes payable and capital stock installments.....	226, 498, 695	10, 960, 266	4.84
Other payables and miscellaneous reserves.....	129, 691, 232		
Depreciation and amortization reserves.....	504, 586, 991		
Surplus.....	105, 813, 290		
Total.....	1, 487, 941, 456	38, 609, 633	2.59
Balance financed through sales of capital stock.....	1, 257, 913, 547	120, 859, 522	9.61
Deduct: Average preferred stock outstanding.....	187, 263, 297	12, 103, 216	6.46
Balance relating to average par value of common stock outstanding.....	1, 070, 650, 250	108, 756, 306	10.16

¹ All averages represent sum of opening and closing balances for the year divided by 2.

Upon the average gross investment of \$2,745,855,003 the associated companies earned 5.81 percent in 1926. About a fifth of this investment was financed by funded debt, at an average cost of 5.30 percent. An additional 8 percent was financed through advances, notes, etc., at an average rate of 4.84 percent. Taking these two sources of capital together, amounting in the aggregate to \$747,849,943, the average rate was 5.16 percent, as compared with a return of 5.81 percent on total investment. In addition, there were large average amounts of funds available from sources represented by payables and miscellaneous reserves, \$129,691,232, depreciation and amortization reserves, \$504,586,991, and surplus, \$105,813,290, or a total of \$740,091,513, which did not require the issuance of additional stock or interest-bearing obligations. On this amount, which was equal to approximately 27 percent of total average investment, there were no interest or dividend charges, but the associated companies had a return of 5.81 percent on an equivalent amount of gross assets. The result, of course, was that upon the total resources represented by funded debt, notes, payables, reserves, and surplus, amounting to \$1,487,941,456, the average cost was only 2.59 percent, as compared with 5.81 percent return on total average investment. The result of this leverage was that on the \$1,257,913,547 representing the balance financed by capital stock, the return was 9.61 percent. Allowing for average preferred stock of \$187,263,297, on which the dividends were paid at the average rate of 6.46 percent, the income on the average par value of the common stock was 10.16 percent. As a result, the American Co. was able to earn 9.77 percent on its investment in common stock of the associated Telephone companies and 7.58 percent on the basis of dividends received out of that income in 1926. (See table 93.)

A similar tabulation for 1935 shows that the leverage provided by the funds available from internal sources, represented by depreciation and amortization reserves, surplus, non-interest-bearing payables and miscellaneous reserves, was equally effective in years when the earnings on total investment were fairly low. This tabulation, presented on the following page, shows that from a return of 4.23 percent on average gross investment, the balance of earnings applicable to paid-in capital yielded 6.33 percent, and on the basis of par value, 6.36 percent, due principally to the presence of \$923,730,950 of depreciation and amortization reserves which reflected a like amount of funds provided from operations and available for investment in assets. As a result of this leverage, the American Co. received in 1935 a return on its investment in common stock of associated companies of 6.16 percent, considering equity in net income, and 5.93 percent, considering dividends actually received; whereas the rate of net telephone earnings on average gross book cost of plant in 1935 was 4.51 percent, and on total average investment, 4.23 percent.

Particulars	Average gross investment and segregation by sources of financing	Earnings on investment	
		Amount	Percent
Totals for year 1935.....	\$4, 158, 978, 339	\$175, 762, 708	4. 23
Deduct average amount financed with funds obtained from sources other than from sales of capital stock, represented by:			
Funded debt.....	493, 929, 360	24, 208, 779	4. 90
Advances from American Co., pension fund notes, and other notes payable.....	251, 756, 954	12, 396, 750	4. 92
Other payables and miscellaneous reserves.....	136, 611, 853		
Depreciation and amortization reserves.....	923, 730, 950		
Surplus.....	154, 904, 337		
Total.....	1, 960, 933, 454	36, 605, 529	1. 87
Balance financed through sales of capital stock.....	2, 198, 044, 885	139, 157, 179	6. 33
Deduct average preferred stock outstanding.....	162, 033, 300	10, 270, 827	6. 34
Balance.....	2, 036, 011, 585	128, 886, 352	6. 33
Deduct premium on capital stock.....	10, 733, 485		
Balance relating to average par value of common stock outstanding.....	2, 025, 278, 100	128, 886, 352	6. 35

Associated Company Earnings on Plant.

From the point of view of effectiveness of regulation, the more significant data, of course, are the rates of return indicated by net telephone earnings on average net book cost of plant.²⁹ These data for all associated companies are presented in table 95 for 1913 to 1936, inclusive. This tabulation indicates that the lowest rate of return on net book cost was realized in 1920, when the ratio was 4.83 percent. The next lowest point was reached in 1933, when the rate of return on average net book cost was 5.25 percent. The highest level was reached in 1929, when the rate was 7.91 percent. The average for the whole period 1913 to 1936, inclusive, was 6.64 percent. The average for the years 1923-31, generally years of prosperity, was 7.32 percent.

²⁹ The percentages in this section are on gross and net book cost of plant. To obtain a more accurate picture from a regulatory point of view, an allowance, of course, should be made for working capital. To the extent that the influence of such inclusion would increase the base to something larger than plant figures, the percentages in this section are slightly overstated.

TABLE 95.—*Computation of rate of return earned on average gross and net book cost of telephone plant and equipment of Associated Bell Telephone companies, years 1913 to 1936, inclusive*

Year ended December 31— (a)	Average gross book cost of plant: ¹ (b)	Average depre- ciation and amortization reserves: ¹ (c)	Average net book cost of plant: ¹ (d) = (b) - (c)	Telephone operating revenues (e)	Telephone operating expenses (f)	Net tele- phone earnings (g) = (e) - (f)	Percent return on—	
							Average gross book cost (h) = (g) ÷ (b)	Average net book cost (i) = (g) ÷ (d)
1913.....	\$721,300,908	\$87,590,822	\$633,711,486	\$198,208,451	\$155,584,404	\$42,714,047	5.92	9.34
1914.....	773,804,887	101,471,104	672,333,783	208,076,114	185,534,403	42,441,291	5.49	8.16
1915.....	818,812,820	118,945,728	699,867,092	228,081,559	179,171,384	48,009,475	5.97	8.59
1916.....	845,981,085	140,087,283	705,063,802	248,091,413	192,104,389	55,987,393	6.62	9.52
1917.....	845,981,085	140,087,283	705,063,802	274,543,640	223,104,643	51,438,997	6.09	8.69
1918.....	1,036,397,894	197,815,601	838,582,293	346,653,643	300,031,009	46,622,634	4.50	5.31
1919.....	1,109,847,194	222,368,171	887,479,023	377,179,890	300,031,009	77,148,083	6.95	7.84
1920.....	1,208,832,113	244,368,154	964,463,959	412,475,418	367,111,471	45,363,947	3.76	4.28
1921.....	1,298,272,877	300,994,183	997,278,694	440,361,019	360,811,848	79,556,845	6.12	6.25
1922.....	1,475,016,417	340,911,057	1,134,105,360	503,125,452	421,071,383	82,054,067	5.73	6.43
1923.....	1,646,220,823	384,437,500	1,261,783,323	553,785,474	467,809,343	85,976,131	5.35	6.07
1924.....	1,694,292,013	424,380,202	1,269,911,811	617,082,453	511,128,808	106,753,043	6.35	8.01
1925.....	2,194,297,042	454,284,906	1,740,012,136	767,899,471	611,128,808	156,770,663	7.21	8.16
1926.....	2,454,478,779	554,584,961	1,900,893,818	936,847,889	613,814,993	323,032,896	16.95	8.78
1927.....	2,702,899,880	544,083,791	2,158,816,089	984,752,292	715,060,892	269,755,197	12.50	7.46
1928.....	2,931,698,880	628,554,923	2,303,143,957	1,013,472,293	780,071,866	233,400,427	8.03	7.81
1929.....	3,191,120,350	682,468,072	2,508,652,278	1,013,472,293	813,871,866	199,600,427	6.35	7.09
1930.....	3,494,122,897	703,078,077	2,791,044,820	990,812,798	794,311,375	196,501,423	5.63	6.79
1931.....	3,698,124,887	703,078,077	2,995,056,810	896,345,793	747,311,375	149,034,417	4.16	5.37
1932.....	3,779,049,538	785,018,998	3,000,030,540	891,115,860	653,911,375	237,124,485	6.35	8.23
1933.....	3,790,049,538	785,018,998	3,005,030,540	822,416,157	668,195,011	154,221,146	4.16	5.23
1934.....	3,771,463,949	823,744,795	2,947,719,154	866,489,720	683,284,011	183,205,713	4.86	5.98
1935.....	3,845,945,923	823,744,795	3,022,201,128	930,461,877	731,863,016	198,608,861	5.16	6.44
1936.....	3,845,945,923	1,004,588,591	2,841,357,332	930,461,877	731,863,016	198,608,861	5.16	6.44
Averages: 1913-1922.....	1,923,311,000	244,368,154	1,678,942,846	412,475,418	367,111,471	45,363,947	2.36	2.64
1923-31.....	2,454,478,779	554,584,961	1,900,893,818	936,847,889	613,814,993	323,032,896	16.95	8.78
1932-36.....	3,779,049,538	785,018,998	3,000,030,540	891,115,860	653,911,375	237,124,485	6.35	8.23
1913-36.....	2,454,478,779	554,584,961	1,900,893,818	936,847,889	613,814,993	323,032,896	16.95	8.78

¹ Averages are based upon annual operating and closing balances; and gross and net plant include all intangible capital accounts, exclude construction work in progress, and include no allowances for working capital.

Source: Exhibit 1364, schedules A-2, A-4, A-16, and B-1, and Bell Telephone System monthly reports Nos. 1 and 2, for December 1936.

Rates of earnings by companies.—The rate of return on average net book cost of plant of individual associated companies showed a considerable variation as compared with the average for all companies and also as compared with each other.³⁰ The most prosperous results were achieved by the Cincinnati & Suburban Bell Telephone Co. in which the American Co. has only a 29-percent interest. The lowest rate of return during the 14-year period 1924–37 reached by the Cincinnati & Suburban Bell Telephone Co. was 6.87 percent in 1934, and the highest, 11.43 percent in 1928. The Southwestern Bell Telephone Co. and the Northwestern Bell Telephone Co., both 100 percent subsidiaries of the American Co., also have very profitable records in the years 1924 to 1937. At the lowest point, the former had a return on average net book cost of plant of 5.48 percent in 1933. In 1925 it showed a return of 10.16 percent. In 8 years out of 14, the Southwestern Co. had a return of more than 8 percent on net book cost of plant.³¹ The Northwestern Bell Telephone Co. reached the lowest rate of return in 1934, with 5.46 percent. The average, however, was well above this figure, as in 5 years out of 14 its rate of return was between 9 and 10 percent. The Diamond State Telephone Co., which operates in the State of Delaware where there is no regulatory commission having jurisdiction over telephone companies, had a consistent record of return above 6 percent on net book cost of plant in all 14 years. In 8 of these, its rate of return was above 7 percent. Its lowest return on net plant was 6.25 percent in 1935, and its highest rate was 10.40 percent in 1926. Again, the Chesapeake & Potomac Telephone Co. of Baltimore City has had a rate of return on net plant of between 6 and 7 percent in 2 years out of 14, and over 7 percent in 11 other years. During the depression of 1930–35, the lowest rate was 6.22 percent. In 1936 the return on net plant had reached 8.27 percent.

³⁰ See table 96, p. 539.

³¹ See table 97, p. 540.

TABLE 96.—Rate of return earned on average net book cost¹ of telephone plant and equipment of Associated Bell Telephone companies, by companies, years 1924 to 1937, inclusive

Item	Company (a)	1924 (b)	1925 (c)	1926 (d)	1927 (e)	1928 (f)	1929 (g)	1930 (h)	1931 (i)	1932 (j)	1933 (k)	1934 (l)	1935 (m)	1936 (n)	1937 ² (o)
1	New England Telephone & Telegraph Co.	Percent 8.86	Percent 8.13	Percent 7.28	Percent 7.35	Percent 7.49	Percent 7.05	Percent 7.31	Percent 7.01	Percent 6.00	Percent 5.25	Percent 5.60	Percent 5.74	Percent 5.98	Percent 6.16
2	The Southern New England Telephone Co.	8.55	8.50	8.34	7.52	7.92	7.70	7.31	7.27	8.05	8.35	8.62	8.93	9.04	9.00
3	New York Telephone Co.	8.55	8.53	8.37	7.52	7.92	7.73	7.31	7.27	8.05	8.35	8.62	8.93	9.04	9.00
4	New Jersey Bell Telephone Co.	3.42	7.80	7.30	6.09	7.79	7.28	6.96	6.87	6.07	4.77	4.37	4.59	4.53	4.86
5	The Bell Telephone Co. of Pennsylvania	6.63	6.87	7.31	6.09	7.79	7.28	6.96	6.87	6.07	4.77	4.37	4.59	4.53	4.86
6	The Diamond State Telephone Co.	9.73	9.52	10.40	6.64	8.94	7.25	7.62	7.32	6.89	6.62	6.84	6.70	6.71	6.94
7	The Chesapeake & Potomac Telephone Co.	9.72	9.76	9.96	7.49	8.53	7.67	7.35	9.01	7.22	7.59	4.79	7.88	7.74	7.01
8	The Chesapeake & Potomac Telephone Co. of Baltimore City	4.53	7.62	8.37	7.32	8.09	8.19	7.90	8.38	7.10	6.22	6.99	7.05	8.27	7.33
9	The Chesapeake & Potomac Telephone Co. of Virginia	6.47	5.08	7.09	7.17	8.00	8.30	7.53	8.21	6.68	6.20	6.67	7.37	8.04	7.43
10	The Chesapeake & Potomac Telephone Co. of West Virginia	3.73	5.53	6.44	5.90	5.79	5.34	5.08	4.92	2.96	2.83	3.95	4.01	4.89	5.33
11	Southern Bell Telephone & Telegraph Co.	7.46	7.38	7.38	7.06	7.50	7.30	6.93	6.67	5.62	5.16	3.49	6.06	6.96	7.04
12	Cumference Telephone & Telegraph Co., Inc.	5.44	7.04	7.23	7.03	7.09	6.18	5.84	5.02	4.90	4.47	5.17	6.17	7.45	6.38
13	The Ohio Bell Telephone Co.	8.42	7.74	7.74	7.15	8.48	10.37	8.92	8.77	8.20	7.43	6.87	7.11	9.65	7.94
14	The Cincinnati Bell Telephone Co.	8.42	7.74	7.74	7.15	8.48	10.37	8.92	8.77	8.20	7.43	6.87	7.11	9.65	7.94
15	Michigan Bell Telephone Co.	8.42	7.74	7.74	7.15	8.48	10.37	8.92	8.77	8.20	7.43	6.87	7.11	9.65	7.94
16	Indiana Bell Telephone Co.	8.42	7.74	7.74	7.15	8.48	10.37	8.92	8.77	8.20	7.43	6.87	7.11	9.65	7.94
17	Wisconsin Bell Telephone Co.	8.42	7.74	7.74	7.15	8.48	10.37	8.92	8.77	8.20	7.43	6.87	7.11	9.65	7.94
18	Illinois Bell Telephone Co.	8.42	7.74	7.74	7.15	8.48	10.37	8.92	8.77	8.20	7.43	6.87	7.11	9.65	7.94
19	Northwestern Bell Telephone Co.	8.42	7.74	7.74	7.15	8.48	10.37	8.92	8.77	8.20	7.43	6.87	7.11	9.65	7.94
20	Southern Bell Telephone Co.	8.42	7.74	7.74	7.15	8.48	10.37	8.92	8.77	8.20	7.43	6.87	7.11	9.65	7.94
21	The Mountain States Telephone & Telegraph Co.	8.42	7.74	7.74	7.15	8.48	10.37	8.92	8.77	8.20	7.43	6.87	7.11	9.65	7.94
22	The Pacific Telephone & Telegraph Co.	8.42	7.74	7.74	7.15	8.48	10.37	8.92	8.77	8.20	7.43	6.87	7.11	9.65	7.94
23	Southern California Telephone Co.	8.42	7.74	7.74	7.15	8.48	10.37	8.92	8.77	8.20	7.43	6.87	7.11	9.65	7.94
24	Bel Telephone Co. of Nevada	8.42	7.74	7.74	7.15	8.48	10.37	8.92	8.77	8.20	7.43	6.87	7.11	9.65	7.94
25	The Home Telephone & Telegraph Co. of Spokane	8.25	11.60	6.50	4.47	6.08	4.83	4.97	5.40	4.30	2.64	3.46	3.85	3.21	2.51

¹ Average net book cost represents the average of annual opening and closing balances of telephone plant and equipment accounts (including all intangible capital accounts, but excluding construction work in progress), less balances in depreciation and amortization reserves. No allowances have been included for working capital.

² Preliminary figures taken from Bell System Reports for December 1937.

³ Name changed from The Delaware & Atlantic Telephone & Telegraph Co. on June 30, 1926.

⁴ 6 months on annual basis, merged with Southern Bell Telephone & Telegraph Co. on Nov. 30, 1935.

Parentheses denotes red figure.

Source: Form "M" annual reports filed with the Interstate Commerce Commission and the Federal Communications Commission.

TABLE 97.—Number of years Associated Bell Telephone companies earned specified rates of return at 1-percent intervals, by companies, 1924 to 1936, inclusive

Item	Company (a)	2-3 per- cent (b)	3-4 per- cent (c)	4-5 per- cent (d)	5-6 per- cent (e)	6-7 per- cent (f)	7-8 per- cent (g)	8-9 per- cent (h)	9-10 per- cent (i)	10-11 per- cent (j)	11-12 per- cent (k)
1	New England Telephone & Telegraph Co.....			1	4	2	6				
2	The Southern New England Telephone Co.....				4	1	3	4	1		
3	New York Telephone Co.....				2	4	7				
4	New Jersey Bell Telephone Co.....		1	3	2	3	3	1			
5	The Bell Telephone Co. of Pennsylvania.....			2	2	5	3	1			
6	The Diamond State Telephone Co.....					5	3	1	3	1	
7	The Chesapeake & Potomac Telephone Co.....			1			7	1	4		
8	The Chesapeake & Potomac Telephone Co. of Baltimore City.....			1		2	5	5			
9	The Chesapeake & Potomac Telephone Co. of Virginia.....				1	4	4	4			
10	The Chesapeake & Potomac Telephone Co. of West Virginia.....	2	2	3	5	1					
11	Southern Bell Telephone & Telegraph Co.....				3	4	4		2		
12	Cumberland Telephone & Telegraph Co., Inc. ¹					1	2				
13	The Ohio Bell Telephone Co.....			2	4	2	5				
14	The Cincinnati & Suburban Bell Telephone Co.....					1	2	5	1	3	1
15	Michigan Bell Telephone Co.....	2	1	2	1	2	4	1			
16	Indiana Bell Telephone Co.....			3	3	1	3	3			
17	Wisconsin Telephone Co.....	3	1		2	1		1	5		
18	Illinois Bell Telephone Co.....				2	4	3	4			
19	Northwestern Bell Telephone Co.....				2	3	1	2	5		
20	Southwestern Bell Telephone Co.....				2	3		5	1	2	
21	The Mountain States Telephone & Telegraph Co.....			2	3	1	1	5	1		
22	The Pacific Telephone & Telegraph Co.....				3	4	4	2			
23	Southern California Telephone Co. ²			1	2	3	4	2			
24	Bell Telephone Co. of Nevada ³	6	1		2	1			2		
25	The Home Telephone & Telegraph Co. of Spokane ⁴	1	2	4	1	2		1			1

¹ 6 months on annual basis, merged with Southern Bell Telephone & Telegraph Co. on June 30, 1926.² Recorded a deficit in 1924.³ Recorded a return of 1.04 percent in 1930.⁴ 11 months on annual basis, merged with the Pacific Telephone & Telegraph Co. on Nov. 30, 1935.

Source: Table 96, p. 539.

Generally, the rate of return on net plant has been lower during the worst years of the depression, 1931-34, than during other years. In 1933, for instance, there were six companies which had a comparatively low rate of return on net book cost of plant. The six companies with the lowest rate of return were as follows:

	Percent
Bell Telephone Co. of Nevada.....	2.08
The Home Telephone & Telegraph Co. of Spokane.....	2.64
The Chesapeake & Potomac Telephone Co. of West Virginia.....	2.83
Michigan Bell Telephone Co.....	2.86
Wisconsin Telephone Co.....	2.95
The Mountain States Telephone & Telegraph Co.....	4.11

The six companies with the highest rates of return on net book cost of plant in 1933 were as follows:

	Percent
The Chesapeake & Potomac Telephone Co. (Washington, D. C.).....	7.59
The Cincinnati & Suburban Bell Telephone Co.....	7.43
The Diamond State Telephone Co.....	6.62
The Chesapeake & Potomac Telephone Co. of Baltimore City.....	6.22
Northwestern Bell Telephone Co.....	6.22
The Chesapeake & Potomac Telephone Co. of Virginia.....	6.20

The difference between the performance in the depression year of 1933 and a year of prosperity, for instance 1928, is quite pronounced. In the latter year there were no associated companies showing a return on net book cost of plant of less than 5 percent. The six companies showing the lowest rate of return in 1928 were the following:

	Percent
The Chesapeake & Potomac Telephone Co. of West Virginia.....	5.79
Bell Telephone Co. of Nevada.....	5.92
The Home Telephone & Telegraph Co. of Spokane.....	6.08
Michigan Bell Telephone Co.....	6.58
The Ohio Bell Telephone Co.....	7.09
The Pacific Telephone & Telegraph Co.....	7.28

The performance of the six companies receiving the lowest rate of return in 1928 was almost as good as the performance of the six most profitable companies in 1933. And, of course, the showing made by the six most successful companies in 1928 was far above the best performance of 1933, as shown below:

	Percent
The Cincinnati & Suburban Bell Telephone Co.....	11.43
Wisconsin Telephone Co.....	9.90
Northwestern Bell Telephone Co.....	9.86
The Southern New England Telephone Co.....	9.02
Indiana Bell Telephone Co.....	8.99
The Diamond State Telephone Co.....	8.80

The contrast between the experience of a good year and that of a bad year is equally clearly presented by the rates of return on average net book cost of all associated companies combined. In 1928, the overall rate was 7.88 percent; in 1933, 5.25 percent.

Effect of plant expansion on rate of return during depression.—The difference in the rate of return between 1928 and 1933 is not due wholly to a large decline in net telephone earnings. The net income in 1933 was nearly \$28,000,000 less than in 1928. This reduction in net earnings would, of course, result in a lower rate of return in 1933 than in 1928, but it does not fully explain the decline of 2.63 percent in the return on net book cost of plant.³² Another important reason is the expansion in plant, both gross and net, from 1928 to 1933. In the former year, average gross book cost of plant was \$2,936,589,380, and in 1933, it was \$3,780,004,080, an increase of some \$843,000,000; and average net book cost of plant in 1928 was \$2,349,368,584, and in 1933, \$2,994,444,954, an increase of some \$645,000,000. Under these circumstances, even if the net telephone earnings were the same in the 2 years, the rate of return for 1933 would show a decline.

The influence of plant expansion on rate of return is made quite clear if we compare 1927 with 1933, 2 years with approximately the same average number of stations in service, nearly equal gross and net telephone revenues, but considerably different plant investment. For convenience of comparison, relevant facts with respect to these 2 years are presented in table 98. The answer is partly in the fact.

³² On net book cost of plant in 1928 of \$2,350,000,000, a reduction of \$28,000,000 in net revenue would mean only a decline of 1.19 percent in rate of return.

that even with the same operating results as in 1927, in 1933 the rate of return of net earnings upon plant, whether calculated on gross or net book cost of plant, showed a considerable fall, because of the existence of much larger plant investment in 1933.

TABLE 98.—*Comparison of average gross and net plant and telephone revenues, number of stations, investment per station, and rate of return of Associated Bell Telephone companies, years 1927 and 1933*

Item	Particulars	1933	1927	Increase (or decrease) 1933 over 1927
	(a)	(b)	(c)	(d)
1	Average gross book cost of plant.....	\$3,780,004,060	\$2,702,899,826	\$1,077,104,254
2	Average depreciation and amortization reserve.....	785,559,126	545,082,272	240,476,854
3	Average net book cost of plant (item 1—item 2).....	2,994,444,954	2,157,817,554	836,627,400
4	Telephone operating revenues.....	821,101,170	834,781,887	(13,680,717)
5	Telephone operating expenses.....	663,981,335	673,846,801	(9,865,466)
6	Net telephone earnings (item 4—item 5).....	157,119,835	160,935,086	(3,815,251)
7	Average company stations.....	13,216,995	13,265,697	(48,702)
8	Average gross plant per average station (item 1÷item 7).....	\$286	\$204	\$82
9	Average net plant per average station (item 3÷item 7).....	\$227	\$163	\$64
10	Percent of net telephone earnings on average gross book cost of plant.....	4.16	5.95	(1.79)
11	Percent of net telephone earnings on average net book cost of plant.....	5.25	7.46	(2.21)

Source: Exhibit 1364, schedules A, B, and C-12.
Figures in parentheses denote decrease.

Briefly, the comparison between 1927 and 1933 shows that there were approximately the same average number of stations in service, namely, 13,265,697 in 1927 and 13,216,995 in 1933. Furthermore, net telephone earnings were \$160,935,086 and \$157,119,835, respectively, a difference of only about \$3,800,000. Yet the rates of return on gross book cost of plant were 5.95 in 1927, and only 4.16 in 1933; and on net book cost of plant, the rates were 7.46 and 5.25 percent, respectively. This was clearly due to the increases in both gross and net book cost of plant for those 2 years: In the former case, the plant figures expanded from \$2,702,899,826 in 1927 to \$3,780,004,080 in 1933, a difference of some \$1,077,000,000; and on the latter basis, the increase was from \$2,157,817,554 in 1927 to \$2,994,444,954 in 1933, or an increase of some \$837,000,000. The effect of this is reflected in the investment per average telephone station in operation in the 2 years; in 1927, the average gross plant per average company station was \$204; in 1933, it was \$286. Again, the average net book cost of plant per average company station was \$163 in 1927, and \$227 in 1933. It is self-evident, therefore, that with approximately the same net telephone revenues³³ the rate of return should show such a radical decrease in 1933 as compared with 1927. It must not be taken to imply that these average conditions prevailed in each of the associated companies. Indeed, there were some companies in the system even in 1933 which, in spite of the expanded plant, were able to show earn-

³³ Other indexes also attest to the similarity of operating conditions between the two dates. Total revenues per average company station were \$62.93 in 1927, and \$62.12 in 1933; local service revenues were \$45.67 in 1927, and \$46.70 in 1933; total expenses per average company station were \$50.80 in 1927, and \$50.24 in 1933; and net telephone earnings per average company station were \$12.13 in 1927, and \$11.89 in 1933. See exhibit 1364.

ings of more than 6 or 7 percent on net plant investment.³⁴ The different experience of the various associated companies is apparent in table 96.

Recent revival from depression.—Service and traffic conditions have improved materially since the low point of the depression in 1933. For instance, there were at least 10 associated companies which made over 7 percent return on net book cost of plant in 1936. These companies were the following:

	Percent
The Chesapeake & Potomac Telephone Co. of Baltimore City.....	8.27
Southwestern Bell Telephone Co.....	8.15
The Cincinnati & Suburban Bell Telephone Co.....	8.05
The Chesapeake & Potomac Telephone Co. of Virginia.....	8.04
Southern California Telephone Co.....	7.91
The Chesapeake & Potomac Telephone Co. (Washington, D. C.).....	7.74
The Ohio Bell Telephone Co.....	7.45
New York Telephone Co.....	7.30
Michigan Bell Telephone Co.....	7.22
Indiana Bell Telephone Co.....	7.21

Several large reductions in rates were effected during the first half of 1936. At the instance of the New York Public Service Commission, the New York Telephone Co. introduced rate changes effective in January and August of that year, which were estimated to result in reductions of exchange and toll rates of \$4,392,000 a year. Another large reduction of \$3,205,000 a year was brought about by the California Railroad Commission effective June 1, 1936. In addition, substantial rate decreases were obtained in the first 6 months of 1936 in various States, with estimated annual effects as follows:

Alabama.....	\$268,000
Connecticut.....	105,000
Illinois.....	290,100
Maryland.....	540,000
Missouri.....	171,615
North Carolina.....	276,000
Pennsylvania.....	243,100

The total estimated annual effect of rate reductions obtained during the first half of 1936 amounted to \$10,669,510, according to responses of associated Bell Telephone companies to a questionnaire of the Federal Communications Commission dated June 30, 1936. The results of 1936 operations of the companies showing the largest rates of return on net book cost of plant are summarized on this page. As the reductions here enumerated took effect sometime in the first 6 months of 1936, the rates of return for 1936 are to some extent after the event, and as such would tend to indicate that improvement in the demand for telephone service has somewhat compensated for the reduction of rates. There were, of course, other factors at work which make it difficult to isolate definite cause and effect. Stimulation of demand as a result of the reductions, improvement in general business conditions, and economies in operation may all affect the final results in varying degrees. On the negative side, there are other factors which may retard or counteract the effects of those positive forces toward improved results. Increased taxes, deferred maintenance, and deferred salary increases are negative forces to be considered. Space does not permit here to analyze these many elements and their effects upon telephone rates and earnings.

³⁴ For a list of the six associated companies which showed the highest rates of return on net book cost of plant, see *supra*, p. 541.

The service conditions of the associated companies improved greatly during 1937, in spite of the business recession during the latter part of the year, and by December the number of stations in service surpassed the peak of 1930. As a result, only five associated companies showed a rate of return on net plant investment of less than 6 percent, and only one, Bell Telephone Co. of Nevada, below 5 percent. There were nine companies which showed improvements in 1937 over 1936. There were 10 companies with rates of return on net book cost of plant at 7 percent or more; they were the following: ³⁵

	Percent
The Cincinnati & Suburban Bell Telephone Co.....	8.64
Southwestern Bell Telephone Co.....	7.82
Southern California Telephone Co.....	7.67
The Chesapeake & Potomac Telephone Co. of Virginia.....	7.43
Michigan Bell Telephone Co.....	7.35
The Chesapeake & Potomac Telephone Co. of Baltimore City.....	7.32
New York Telephone Co.....	7.06
Southern Bell Telephone & Telegraph Co.....	7.04
The Chesapeake & Potomac Telephone Co. (Washington, D. C.).....	7.01
Illinois Bell Telephone Co.....	7.00

In the foregoing discussion on profits of the respective operating divisions of the Bell Telephone System, the net operating earnings have been related primarily to the net book cost of telephone plant and equipment, as an indication of the rate of return earned. No allowance for working capital has been included in the averages of net book cost of plant and equipment; however, the inclusion of a proper allowance for this item would not materially affect the results indicated. The American Co. has stated that the net book cost of telephone plant and equipment in service is not a proper base for the measurement of profits, since it does not represent the fair value of the property. The net book cost of telephone plant and equipment represents the net investment of the companies in this class of assets, as reflected in their books of account, and the relationship thereto of the net operating earnings, has considerable significance as an indication of the rate of return earned by the company or companies involved.

SECTION 5. EARNINGS OF WESTERN ELECTRIC CO., INC.

The major part of Western Electric revenues come from sales of apparatus and equipment and furnishing of supplies to Bell Telephone companies. Since the formation of Western Electric Co. of Illinois in 1881, to the end of 1936, approximately 63 percent of total sales related to apparatus and equipment of Western manufacture, and for the 7-year period 1930 to 1936, inclusive, the sale of apparatus and equipment of Western manufacture constituted approximately 73 percent. The balance of total sales for the respective periods related to equipment and supplies obtained from other sources. Since 1916 over 80 percent of the sales of Western have been made to Bell companies, and since 1924 over 90 percent have been sold to affiliated concerns. Indeed, prior to 1908, the Western Electric Co. was not permitted, according to the provisions of the contract of 1882 with the American Bell Telephone Co., to sell equipment covered by Bell patents to others than Bell licensees in the United States. Prior to that date, most of the non-Bell sales of telephone equipment

³⁵ See table 96 p. 539.

covered by Bell patents were made in foreign countries through foreign distributing houses. Western Electric Co. is, therefore, the manufacturing department of the Bell System; its principal business is with other Bell companies; the major part of its activities directly relate to telephone apparatus and equipment manufacturing; and hence, the major part of its sales are charged to telephone plant and equipment accounts and operating expenses of the Bell Telephone System companies. Finally, the American Telephone & Telegraph Co. is the principal stockholder of Western Electric Co., Inc. During the years 1900 to 1935, inclusive, the dividend receipts of the general department of the American Co. on its investment in the common stock of Western Electric amounted to \$174,792,886.

Total Revenues.

In the period from December 1, 1885, to December 31, 1936, the total revenues of Western Electric Co. of New York and its predecessor, the Western Electric Co. of Illinois, were \$5,283,913,000. Of this 98.69 percent came from sales, and 1.31 percent consisted of other income. The total revenues were disposed of as shown in table 99 below:

TABLE 99.—*Summary of income and surplus accounts showing composition and disposition of revenues of the Western Electric Co. for the period from Dec. 1, 1885, to Dec. 31, 1936, inclusive*

Particulars	Thou- sands of dollars	Percent
(a)	(b)	(c)
Composition of revenues:		
Sales.....	5,214,956	98.69
Other income (net).....	68,957	1.31
Total.....	5,283,913	100.00
Disposition of revenues:		
Cost of sales.....	4,412,797	83.51
Other expenses.....	555,091	10.51
Interest charges.....	69,777	1.32
Reserve appropriations ¹	38,735	.73
Dividends, cash.....	212,559	4.02
Dividends, stock.....	8,750	.17
Total.....	5,297,709	100.26
Balance to surplus.....	(13,796)	(.26)
Direct surplus additions (net).....	28,705	.54
Undistributed surplus for period.....	14,909	.28
Surplus balance Nov. 30, 1885.....	222	.01
Surplus balance Dec. 31, 1936.....	15,131	.29

¹ See the following table:

Reserve for employees' benefit fund, etc.....	\$17,199,314
Reserve for contingencies.....	11,900,000
Extraordinary depreciation.....	9,635,256
Total.....	38,734,570

Approximately \$6,000,000 of these reserve appropriations were restored to surplus in 1927, 1928, and 1929. Parentheses denote red figures.

SOURCE: Exhibit 2000-B, tables 55 and 56, pp. 231 and 232.

Cost of sales, as computed from Western's records, amounted to \$4,412,797,000, or 83.51 percent of total revenues. Other expenses and interest charges took up an additional \$624,868,000, or 11.83

percent, leaving a net income after all expenses and interest payments, of \$246,248,000, which was 4.67 percent of the revenues. After reserve appropriations of \$38,735,000, there remained \$207,513,000, or 3.93 percent of revenues available for dividends. In connection with these reserve appropriations, and as indicated in the footnote in table 99, approximately \$6,000,000 of these miscellaneous reserve appropriations, made in 1926 and prior years, was restored to surplus in the three following years, thereby increasing the income available for dividends by a corresponding amount. Cash dividend payments during the period aggregated \$212,559,000 and stock dividends declared were recorded at \$8,750,000. The sum of these dividends (\$221,309,000) exceeded the remaining revenues by \$13,796,000, which was absorbed in surplus. Other profits and adjustments, in the net amount of \$28,705,000, were added directly to surplus, which left undistributed earnings for the period of \$14,909,000. Adding the surplus balance at November 30, 1885, the resulting net recorded surplus at the end of 1936 was \$15,131,000. These credits and other adjustments are shown below:

Surplus additions:

Profit on sale of International Western Electric Co., Inc., including special dividend of \$9,700,000 received just prior to sale and \$608,000 of reserves set up at time of sale later restored to surplus.....	\$16, 563, 000
Profit on sales of other properties.....	2, 617, 000
Revaluations of investments.....	12, 850, 000
Reserve appropriations for contingencies and employees' benefits restored to surplus.....	5, 975, 000
Profit on sales of marketable securities.....	2, 708, 000
Total.....	40, 713, 000

Surplus deductions:

Premium on retirement of preferred stock.....	8, 468, 000
Premium on retirement of debentures.....	1, 750, 000
Net amount transferred to common-stock account.....	1, 500, 000
Miscellaneous items (net).....	290, 000
Total.....	12, 008, 000
Direct surplus additions (net).....	28, 705, 000

In 1906 and most of the years 1910 to 1928, inclusive, the company made special reserve appropriations aggregating \$38,734,570, of which \$17,199,314 was appropriated for employees' benefit fund, etc., \$11,900,000 for contingencies, and \$9,635,256 for extraordinary depreciation. Of these appropriations approximately \$6,000,000 was ultimately restored to surplus. The appropriations in each year vary materially and bear no particular relationship to the operations for the year. For example, the allowances made for extraordinary depreciation in the years 1924 to 1928, inclusive, in the amount of \$9,635,256, which were in addition to normal depreciation provisions, were designated as provisions for amortizing the differences between the cost of buildings, permanent fixtures, and machinery acquired in a period of high prices, and the estimated cost level which it was expected would prevail from 1930 to 1939. On the other hand, appropriations for employees' benefit fund, etc., of over \$17,000,000, of which almost \$14,000,000 was appropriated in years 1924-27, inclusive, apparently represented operating expense, except for some

\$700,000 later restored to surplus, but do not represent actual expenses applicable to the specific years when appropriated. Accordingly, in the following discussion, the products of Western Electric are shown, on different bases of measurements, both before and after these special reserve appropriations. In this connection, however, it should be borne in mind that the statement of earnings before these appropriations tends to somewhat overstate them, whereas the reported earnings after the reserve appropriations are somewhat overstated.

Earnings on Investment.

Tables 100 and 101, pages 548 and 549, show the relationship to Western Electric earnings, both before and after special reserve appropriations to average gross investments, or total assets, and average net investment, represented by total assets less the reserve for depreciation. The records since 1886, as shown by tables 100 and 101, indicate that from November 30 of that year to November 30, 1906, the net earnings on average gross investment were over 10 percent in every year except 5.³⁶ Net earnings on average gross investment sometimes reached extremely high levels: 22.97 percent in 1887, 17.96 percent in 1899, and 17.02 percent in 1900.

The ratio of net earnings to average net investment during this early period was over 10 percent in all but 2 years.³⁷ In 8 out of the 21 years during this period, the net earnings were over 15 percent on average net investment. In 1887 it was 24.41 percent; in 1899, 20.65 percent; in 1900, 19.54 percent. These high rates of earnings continued into the new century. In 1902 the return on average net investment was 15.95 percent; and in 1906, 16.50 percent. Since 1906 the rates of earnings on net investment have never been as large as the foregoing figures, although from 1924 through 1929 the rates were consistently above 10 percent, usually 12 or 13 percent, before appropriations for reserves.

In 1907 and 1908, 2 years of adverse business conditions, the net earnings on both average gross and net investment were very low. Indeed, in the latter year there was a small deficit. From 1909 to 1924 the net earnings on average gross investment both before and after appropriations for reserves were less than 10 percent in every year. The ratio of net earnings to average net investment, of course, was slightly better. Before appropriations for reserves, the ratio during 1910, 1913, and 1924 was approximately 10.50 percent, and in all the other years but one it was over 6 percent. Considering the net earnings on average net investment after appropriations for reserves, we find that in this 15-year period the rate varied between a low of 4.46 percent in 1916 and a high of 8.56 percent in 1924.

The 5 years, 1925-29, inclusive, were years of large income. The rate of net earnings on average gross investment before appropriations for reserves was between 10 and 11 percent in every year except 1926, when it was 9.84 percent. After appropriations for reserves, earnings on average gross investment were 7.50 percent in 1925, 7.28 percent in 1926, 8.61 percent in 1927, 9.46 percent in 1928, and 10.10 percent in 1929. Considering the net earnings on average net investment,

³⁶ The exceptions are as follows: 1889, when the rate of return on average gross investment was 9.97 percent; 1893, 7.90 percent; 1894, 9.47 percent; 1903, 9.50 percent; and 1904, 7.87 percent.

³⁷ The rate was 8.97 percent in 1893, and 9.56 percent in 1904.

before appropriations for reserves, the rates stood at 13.36 percent in 1925, 12.23 percent in 1926, 13.96 percent in 1927, 13.59 percent in 1928, and 12.53 percent in 1929. After appropriations for reserves, the corresponding figures were 9.28 percent in 1925, 9.05 percent in 1926, 11.02 percent in 1927, 12.33 percent in 1928, and 12.53 percent in 1929.

TABLE 100.—Average investment and net earnings of Western Electric Co., Inc., and predecessor company, years 1886 to 1936, inclusive

(Dollars in thousands)

Year or period ended	Average gross investment	Average net investment	Net earnings ¹		
			Before appropriations for reserves	Deduct appropriations for reserves	After appropriations for reserves
(a)	(b)	(c)	(d)	(e)	(f)=(d)-(e)
Nov. 30:					
1886	\$1,482	\$1,411	\$184		\$184
1887	1,702	1,602	391		391
1888	2,072	1,937	295		295
1889	2,768	2,585	276		276
1890	3,749	3,478	445		445
1891	4,328	3,944	463		463
1892	4,758	4,270	540		540
1893	5,256	4,625	415		415
1894	5,386	4,627	510		510
1895	5,993	5,087	623		623
1896	7,297	6,196	763		763
1897	8,682	7,386	1,165		1,165
1898	10,720	9,119	1,359		1,359
1899	15,765	13,709	2,831		2,831
1900	22,335	19,457	3,801		3,801
1901	25,903	22,102	2,798		2,798
1902	27,807	23,039	3,675		3,675
1903	30,784	25,121	2,924		2,924
1904	35,409	29,160	2,787		2,787
1905	44,121	37,083	5,671		5,671
1906	61,228	52,824	8,717	\$1,550	7,167
1907	67,446	57,834	1,130		1,130
1908	58,517	48,253	(401)		(401)
1909	54,641	43,550	2,423		2,423
Dec. 31:					
1910 ²	61,573	50,731	5,419	1,150	4,269
1911	68,474	57,899	4,135	800	3,335
1912	71,274	59,781	5,710	2,286	3,424
1913	74,065	62,599	6,564	2,500	4,064
1914	73,769	62,533	4,034	500	3,534
1915	76,111	64,392	4,312	650	3,662
1916	84,581	71,927	4,679	1,474	3,205
1917	101,538	86,736	6,661	2,500	4,161
1918	115,563	98,208	6,151	1,100	5,051
1919	123,473	104,129	5,652		5,652
1920	158,537	136,394	8,277		8,277
1921	184,193	158,220	10,166		10,166
1922	173,998	144,820	9,636	400	9,236
1923	184,814	152,396	10,080		10,080
1924	206,927	169,480	18,069	3,563	14,506
1925	214,313	173,184	23,142	7,068	16,074
1926	225,748	181,606	22,210	5,778	16,432
1927	224,512	175,594	24,506	5,167	19,339
1928	232,731	178,661	24,272	2,249	22,023
1929	312,561	251,815	31,556		31,556
1930	376,609	306,609	20,298		20,298
1931	375,068	295,642	15,557		15,557
1932	353,192	272,109	(9,032)		(9,032)
1933	330,239	249,888	(10,491)		(10,491)
1934	310,881	237,578	(4,582)		(4,582)
1935	281,459	216,781	5,353		5,353
1936	270,751	200,926	19,906		19,906

¹ Before interest charges and dividends.

² 13 months ended Dec. 31, 1910.

Parentheses denote red figures.

Source: Exhibit 2090-B, table 72, p. 252.

TABLE 101.—*Ratio of net earnings to average gross and net investment of Western Electric Co., Inc., years 1886 to 1936, inclusive*

Year or period ended (a)	Net earnings ¹ on average gross investment			Net earnings ¹ on average net investment		
	Before appropriations for reserves (b)	Deduct appropriations for reserves (c)	After appropriations for reserves (d)	Before appropriations for reserves (e)	Deduct appropriations for reserves (f)	After appropriations for reserves (g)
Nov. 30:	Percent	Percent	Percent	Percent	Percent	Percent
1886	12.42	-----	12.42	13.04	-----	13.04
1887	22.97	-----	22.97	24.41	-----	24.41
1888	14.24	-----	14.24	15.23	-----	15.23
1889	9.97	-----	9.97	10.68	-----	10.68
1890	11.87	-----	11.87	12.79	-----	12.79
1891	10.70	-----	10.70	11.74	-----	11.74
1892	11.35	-----	11.35	12.65	-----	12.65
1893	7.90	-----	7.90	8.97	-----	8.97
1894	9.47	-----	9.47	11.02	-----	11.02
1895	10.40	-----	10.40	12.25	-----	12.25
1896	10.46	-----	10.46	12.31	-----	12.31
1897	13.42	-----	13.42	15.77	-----	15.77
1898	12.68	-----	12.68	14.90	-----	14.90
1899	17.96	-----	17.96	20.65	-----	20.65
1900	17.02	-----	17.02	19.54	-----	19.54
1901	10.80	-----	10.80	12.66	-----	12.66
1902	13.22	-----	13.22	15.95	-----	15.95
1903	9.50	-----	9.50	11.64	-----	11.64
1904	7.87	-----	7.87	9.56	-----	9.56
1905	12.85	-----	12.85	15.29	-----	15.29
1906	14.24	2.53	-----	16.50	2.93	13.57
1907	1.68	-----	1.68	1.95	-----	1.95
1908	(.69)	-----	(.69)	(.83)	-----	(.83)
1909	4.43	-----	4.43	5.56	-----	5.56
Dec. 31:						
1910 ²	8.80	1.87	6.93	10.68	2.27	8.41
1911	6.04	1.17	4.87	7.14	1.38	5.76
1912	8.01	3.21	4.80	9.55	3.82	5.73
1913	8.86	3.37	5.49	10.48	3.99	6.49
1914	5.47	.68	4.79	6.45	.80	5.65
1915	5.66	.85	4.81	6.70	1.01	5.69
1916	5.63	1.74	3.79	6.51	2.05	4.46
1917	6.56	2.46	4.10	7.68	2.88	4.80
1918	5.32	.95	4.37	6.26	1.12	5.14
1919	4.58	-----	4.58	5.43	-----	5.43
1920	5.22	-----	5.22	6.07	-----	6.07
1921	5.52	-----	5.52	6.43	-----	6.43
1922	5.54	.23	5.31	6.65	.28	6.37
1923	5.45	-----	5.45	6.61	-----	6.61
1924	8.73	1.72	7.01	10.66	2.10	8.56
1925	10.80	3.30	7.50	13.36	4.08	9.28
1926	9.84	2.56	7.28	12.23	3.18	9.05
1927	10.91	2.39	8.61	13.96	2.94	11.02
1928	10.43	.97	9.46	13.59	1.25	12.33
1929	10.10	-----	10.10	12.53	-----	12.53
1930	5.39	-----	5.39	6.62	-----	6.62
1931	4.15	-----	4.15	5.26	-----	5.26
1932	(2.56)	-----	(2.56)	(3.82)	-----	(3.32)
1933	(3.18)	-----	(3.18)	(4.20)	-----	(4.20)
1934	(1.47)	-----	(1.47)	(1.93)	-----	(1.93)
1935	1.90	-----	1.90	2.48	-----	2.48
1936	7.35	-----	7.35	9.91	-----	9.91

¹ Before interest charges and dividends.² 13 months ended Dec. 31, 1910.

Parentheses denote red figures.

Source: Exhibit 2090-B, table 73, p. 283.

In 1929 the total revenues reached a peak of \$419,628,000. From then on through 1933, there was a sharp decline in total sales to \$71,414,000 in the latter year.³⁸ Net income also showed a drastic decline. From a high of \$31,556,000 in 1929, it fell to \$20,298,000 in 1930, and \$15,557,000 in 1931. In the next 3 years, 1932, 1933,

³⁸ See exhibit 2090-B, table 63, p. 248.

and 1934, there were deficits of \$9,000,000, \$10,000,000, and \$4,500,000, respectively.³⁹

Since the low point of 1933, total revenues have risen considerably, reaching \$149,107,000 in 1936. The net income in 1935 was \$5,353,000, and in 1936, \$19,906,000. During the whole period 1930 through 1936, both average gross and net investment decreased, until in the latter year they were \$270,751,000 and \$200,926,000, respectively. As a result, the ratio of net earnings to both gross and net investment in 1936 were 7.35 percent and 9.91 percent, respectively, which were higher than the corresponding rates in 1930 by 2 and 3 percent, although the net earnings in that year were slightly larger than in 1936. The reduction in the average gross and net investment was due principally to diminished inventories and receivables.

The earnings record of Western Electric Co. for the whole period of 51 years from 1886 to 1936 shows an average return of 5.47 percent on gross investment and 6.80 percent on net investment, before appropriations for reserves; and, after appropriations for reserves, the average return was 4.80 percent on gross investment and 5.97 percent on net investment. In 22 of these 51 years, the net earnings on net investment have been over 10 percent both before and after appropriations for reserves. Only during the years of severe depression, such as 1907-9 and 1931-35, have these rates been materially below 6 percent. The average record of Western Electric Co. earnings during significant periods of its history is summarized in the following tabulation:

Period	Characterization of the period relative to the growth of the company and its business	Net earnings before appropriations for reserves		Net earnings after appropriations for reserves	
		On gross investment	On net investment	On gross investment	On net investment
		Percent	Percent	Percent	Percent
1886-98...	Gradual growth.....	11.57	13.20	11.57	13.20
1899-1906...	Very rapid growth.....	12.61	14.92	12.02	14.23
1907-9.....	Recession.....	1.75	2.11	1.75	2.11
1910-15....	Recovery and resumption of gradual growth.....	7.10	8.43	5.24	6.23
1916-27....	Rapid growth.....	7.47	9.03	6.11	7.39
1928-30....	Very rapid growth.....	8.26	10.33	8.01	10.02
1931-35....	Drastic decline and partial recovery.....	(1.94)	(2.51)	(1.94)	(2.51)
1936.....	Partial recovery.....	7.35	9.91	7.35	9.91
1886-1930....	45-year period.....	7.77	9.42	6.76	8.20
1886-1935....	50-year period.....	5.38	6.66	4.68	5.79
1886-1936....	51-year period.....	5.47	6.80	4.80	5.97

Parentheses denote red figures.

In connection with the net earnings of Western, before and after reserve appropriations, as shown in certain tabulations and referred to in discussions contained in this chapter, attention should be called to the fact that the reserve appropriations referred to do not include the regular provisions for depreciation, but consist principally of appropriations for special reserves, such as the employees' benefit reserve and reserves for contingencies and extraordinary depreciation. The regular provisions for depreciation and other operating reserves are included in cost of sales and other expenses, which are deducted from total revenues before arriving at the amounts designated as net earnings before appropriations for reserves.

³⁹ See table 100, p. 548.

Earnings on Common Stock.

Since the principal financial interest of the American Co. in the Western Electric Co. is in its common stock, it is relevant to the explanation of the American Co.'s record of earnings to indicate the extent of the profitability of this investment. For this purpose, the ratio of net income to average common-stock equity and to average cash investment by common-stock holders will be analyzed. These ratios are presented in tables 103 and 104, respectively.

For the purposes of these tables and the related analyses, preferred stock amounting to \$15,000,000 par value, originally exchanged (together with 150,000 shares of no-par common stock) for the total outstanding common stock of Western Electric Co. of Illinois, at the date of organization of Western Electric Co., Inc., of New York in 1915, has been included with the common stock for the years 1915 to 1920. This preferred stock, including an additional \$15,000,000 par value issued in 1917, was called for redemption in 1920. Additional no-par common stock was issued at the same time, and in effect these transactions constituted a conversion of this preferred stock into no-par common stock.

During the 55 years from 1882 to 1936, inclusive, the average ratio of net income, before appropriations for reserves, to average common-stock equity was 8.6 percent. In 35 out of these 55 years the ratio of such net income to average common-stock equity was over 10 percent, and in 13 of the 35 it was over 20 percent. The highest rates of return were 29.4 percent in 1887, 39.7 percent in 1899, 35.1 percent in 1900, 26.6 percent in 1906, and 25.0 percent in 1928. In 13 of the remaining 20 years, the ratio was over 6 percent. Only during 5 years, namely, 1907, 1908, 1932, 1933, and 1934, has there been any deficit shown. In the same 55-year period, the average ratio of net income, after appropriations for reserves, to average common-stock equity was 7.2 percent. In 31 years of the period the ratio of such net income to average common-stock equity was over 10 percent, and in 12 of the 31 years it was over 20 percent. The highest rates of return were 29.4 percent in 1887; 39.7 percent in 1899; 35.1 percent in 1900; 22.7 percent in 1902; 23.8 percent in 1905; 21.3 percent in 1906; 22.4 in 1928; and 21.6 in 1929. In 13 of the remaining 24 years the ratio of net income, after reserve appropriations, to common-stock equity was over 6 percent. Deficits are shown for the same 5 years as those indicated before appropriations for reserves. Net income available for common stock and total dividends on common stock for the years 1882 to 1936, inclusive, are presented graphically in chart 14.

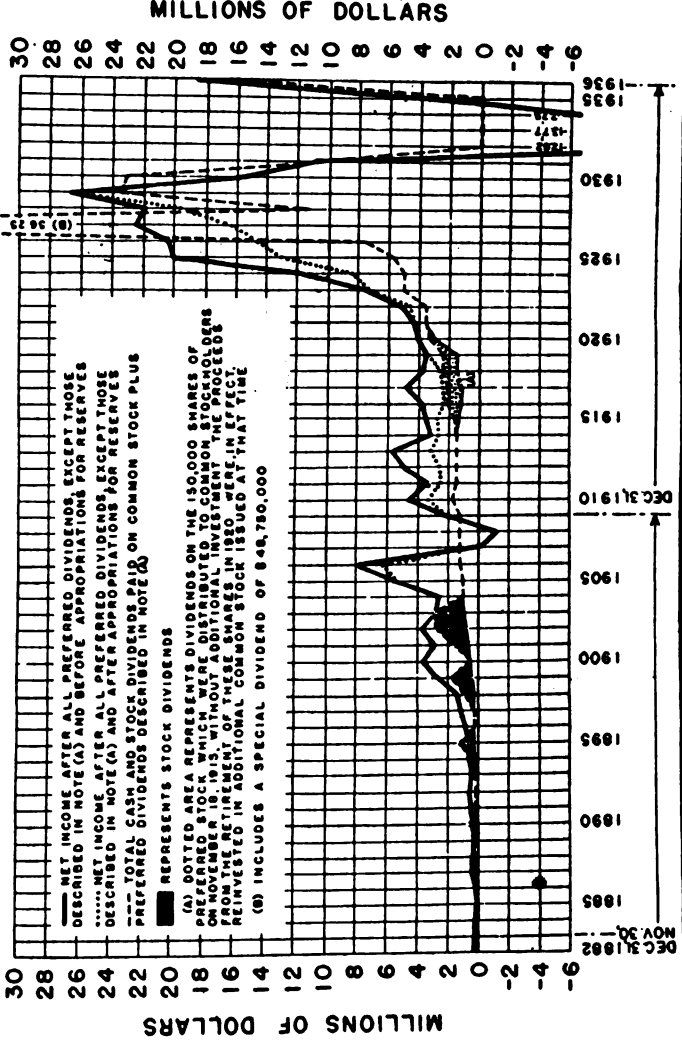
The ratios of net income to average cash paid into the company by common-stock holders since 1882 are shown in table 104. The ratio of net income, before appropriations for reserves, to average cash paid-in capital of the stockholder for the whole period of 55 years has been 17.8 percent, and 14.9 percent after appropriations for reserves. The ratio of cash dividends to average cash paid-in capital has been 15.3 percent, and the ratio of total dividends to the same base has been 15.9 percent. These averages, of course, are weighted downward by the years of deficits above-mentioned and also by a few lean years. In 45 out of the 55 years, however, the ratio of net income, before appropriations for reserves, to average cash paid-in capital has been over 15 percent. In 41 of these 45 years this ratio has been over 20

CHART 14.

WESTERN ELECTRIC COMPANY, INCORPORATED, AND PREDECESSOR COMPANY

NET INCOME AVAILABLE FOR COMMON STOCK AND DIVIDENDS PAID

YEARS 1892 TO 1936, INCLUSIVE



percent. In 25 out of 55 years the ratio of net income to average cash investment has been over 50 percent. In 6 years, the ratio of net income to average cash investment was over 100 percent: namely, in 1898, 104.4 percent; 1899, 181 percent; 1900, 139.9 percent; 1902, 113.5 percent; 1905, 165.3 percent; and 1906, 141.4 percent. In 45 of the same 55 years the ratio of net income, after appropriations for reserves, to average cash paid-in capital has been over 15 percent. In 41 of the 45 years this ratio has been over 20 percent. In 15 out of 55 years the ratio of net income, after appropriations for reserves, to average cash investment has been over 50 percent. In 6 years the ratio of net income, after appropriations for reserves, to average cash investment was over 100 percent: namely, in 1898, 104.4 percent; 1899, 181.0 percent; 1900, 139.9 percent; 1902, 113.5 percent; 1905, 165.3 percent; and in 1906, 113.2 percent.

The average rates of income, before and after appropriations for reserves, on cash paid-in capital during significant periods in the history of Western Electric also reflect a record of exceptional earnings on common stock. Table 102 presents certain ratios of net income (before and after appropriations for reserves), cash dividends, and total dividends (including stock dividends) to average common-stock equity and to average cash paid-in capital. During the 49 years, 1882 to 1930, inclusive, the average ratio of net income to common-stock equity, before and after appropriations for reserves, was 13.8 percent and 11.5 percent, respectively, and to cash paid-in capital of stockholders it was 41.3 percent and 34.7 percent, respectively. The average ratios of cash dividends, and of total dividends, to cash paid-in capital were 30.5 and 32.0 percent, respectively. The average ratios for other periods, as shown in table 102, are equally significant and need no further recapitulation.

TABLE 102.—*Annual rates of return earned by Western Electric Co., Inc. (New York), and predecessor Company, on common stock equity and on average cash investment by stockholders, by periods of growth, years 1882 to 1936, inclusive*

Periods of growth (years)	Description	Ratio of net income available for common stock				Ratio of cash dividends to average cash paid-in capital	Ratio of total dividends to average cash paid-in capital
		To average common stock equity		To average cash paid-in capital			
		Before appropriations for reserves	After appropriations for reserves	Before appropriations for reserves	After appropriations for reserves		
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)
		Percent	Percent	Percent	Percent	Percent	Percent
1882-98.....	Gradual growth.....	18.3	18.3	41.5	41.5	11.6	23.6
1899-1906....	Very rapid growth.....	22.4	21.3	121.0	115.0	24.0	49.1
1907-09.....	Recession.....	9	9	5.0	5.0	19.2	19.2
1910-15.....	Recovery and resumption of gradual growth.....	10.8	7.4	66.6	45.6	24.8	24.8
1916-27.....	Rapid growth.....	13.4	10.1	41.7	31.6	36.8	36.8
1928-30.....	Very rapid growth.....	16.1	15.6	30.0	28.9	26.9	26.9
1931-35.....	Drastic decline and partial recovery.....	(2.4)	(2.4)	(3.3)	(3.3)	1.7	1.7
1936.....	Partial recovery.....	12.0	12.0	14.8	14.8	13.1	13.1
1882-1930....	49-year period.....	13.8	11.5	41.3	34.7	30.5	32.0
1882-1935....	54-year period.....	8.4	6.9	18.1	14.9	15.5	16.2
1882-1936....	55-year period.....	8.6	7.2	17.8	14.9	15.3	15.9

Parentheses denote red figures.

TABLE 103.—*Net income on common-stock equity of Western Electric Co., Inc., years 1882 to 1936, inclusive*

[Dollars in thousands]

Year or period ended	Balance at beginning of year		Add new capital supplied by common-stock holders during year ¹	Average common-stock equity ²	Net income available for common stock		Ratio of net income to average common-stock equity	
	Common stock and surplus	Reserve for contingencies			Before appropriations for reserves	After appropriations for reserves	Before appropriations for reserves	After appropriations for reserves
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)
Dec. 31: 1882 ³	\$880			\$880	\$210	\$210	Percent 23.9	Percent 23.9
Nov. 30:								
1883 ⁴	948		\$50	998	144	144	14.4	14.4
1884	1,218			1,218	152	152	12.5	12.5
1885	1,288			1,288	96	96	7.5	7.5
1886	1,222			1,222	186	186	15.2	15.2
1887	1,348			1,348	396	396	29.4	29.4
1888	1,664			1,664	304	304	18.3	18.3
1889	1,833			1,833	260	260	14.2	14.2
1890	1,992		31	2,023	412	412	20.4	20.4
1891	2,554			2,554	448	448	17.5	17.5
1892	2,863			2,863	531	531	18.5	18.5
1893	3,254			3,254	390	390	12.0	12.0
1894	3,469			3,469	500	500	14.4	14.4
1895	3,766			3,766	622	622	16.5	16.5
1896	4,166			4,166	731	731	17.5	17.5
1897	4,657			4,657	1,140	1,140	24.5	24.5
1898	5,557			5,557	1,305	1,305	23.5	23.5
1899	6,583		250	6,833	2,715	2,715	39.7	39.7
1900	9,968		333	10,301	3,614	3,614	35.1	35.1
1901	14,081			14,081	2,750	2,750	19.5	19.5
1902	16,211			16,211	3,688	3,688	22.7	22.7
1903	19,139			19,139	2,786	2,786	14.6	14.6
1904	21,006			21,006	2,560	2,560	12.2	12.2
1905	22,606			22,606	5,371	5,371	23.8	23.8
1906	27,017		2,250	29,267	7,775	6,225	26.6	21.3
1907	35,102	\$1,000		36,102	(121)	(121)	(.3)	(.3)
1908	33,781	1,006		34,787	(1,034)	(1,034)	(3.0)	(3.0)
1909	31,547	1,016		32,563	2,090	2,090	6.4	6.4
Dec. 31:								
1910 ⁵	32,437	1,430		33,867	4,534	3,384	13.4	10.0
1911	34,121	2,847		36,968	3,280	2,480	8.9	6.7
1912	35,101	2,185		37,286	4,853	2,567	13.0	6.9
1913	36,169	3,501		39,670	5,672	3,172	14.3	8.0
1914	37,840	3,545		41,385	3,171	2,671	7.7	6.5
1915	39,011	3,797		42,808	3,477	2,827	8.1	6.6
1916	40,229	4,346		44,575	3,799	2,325	8.5	5.2
1917	40,454	2,800		43,254	4,902	2,402	11.3	5.6
1918	40,755	4,334		45,089	3,710	2,610	8.2	5.8
1919	40,966	4,984		45,950	3,489	3,489	7.6	7.6
1920	42,055	4,833	12,500	59,388	4,068	4,068	6.8	6.8
1921	57,949	4,618		62,567	4,324	4,324	6.9	6.9
1922	58,774	4,819		63,592	5,045	4,645	7.9	7.3
1923	74,932	4,918		79,850	7,192	7,192	9.0	9.0
1924	77,123	4,808		81,931	11,963	8,400	14.6	10.3
1925	80,523	4,859		85,382	20,117	13,049	23.6	15.3
1926	101,434	6,314		107,748	20,352	14,574	18.9	13.5
1927	108,509	6,970		115,479	22,523	17,356	19.5	15.0
1928	87,988			87,988	21,957	19,708	25.0	22.4
1929	110,784		14,167	124,951	26,995	26,995	21.6	21.6
1930	164,557		22,500	187,057	15,625	15,625	8.4	8.4
1931	186,932			186,932	10,816	10,816	5.8	5.8
1932	187,248			187,248	(12,626)	(12,626)	(6.7)	(6.7)
1933	172,709			172,709	(13,773)	(13,773)	(8.0)	(8.0)
1934	160,784			160,784	(7,752)	(7,752)	(4.8)	(4.8)
1935	155,079			155,079	2,620	2,620	1.7	1.7
1936	156,242			156,242	18,698	18,698	12.0	12.0
Total	2,640,424	78,930	52,081	2,771,435	239,052	200,317	8.6	7.2

¹ Represents average new investment on basis of the balances at the 15th day of each month.² Represents average annual common-stock equity exclusive of the earnings of the current year.³ 18-month period.⁴ 11-month period.⁵ 13-month period.

Parentheses denote red figures.

SOURCE: Exhibit 2090-B, table 74, p. 293, and exhibit 2090-C, schedule 4, sheet 1.

TABLE 104.—*Net income and dividends on average cash investment of common-stock holders of Western Electric Co., Inc., years 1882 to 1936, inclusive*

[Dollars in thousands]

Year or period ended	Average cash investment of common-stock holders ¹	Net income available for common stock		Cash dividends on common stock ²	Total dividends on common stock ²	Ratio to average investment of—			
		Before appropriations for reserves	After appropriations for reserves			Net income		Dividends	
						Before appropriations for reserves	After appropriations for reserves	Cash	Total
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)
						Percent 23.9	Percent 23.9	Percent 1.5	Percent 1.5
Dec. 31: 1882 ³	\$880	\$210	\$210	\$13	\$13				
Nov. 30:									
1883 ⁴	930	144	144	2	2	15.5	15.5	.2	.2
1884.....	1,000	152	152			15.2	15.2		
1885.....	1,000	96	96	60	60	9.6	9.6	6.0	6.0
1886.....	1,000	186	186	60	60	18.6	18.6	6.0	6.0
1887.....	1,000	396	396	80	80	39.6	39.6	8.0	8.0
1888.....	1,000	304	304	135	135	30.4	30.4	13.5	13.5
1889.....	1,000	260	260	100	100	26.0	26.0	10.0	10.0
1890.....	1,031	412	412	100	600	40.0	40.0	9.7	56.2
1891.....	1,250	448	448	140	140	35.8	35.8	11.2	11.2
1892.....	1,250	531	531	140	140	42.5	42.5	11.2	11.2
1893.....	1,250	390	390	175	175	31.2	31.2	14.0	14.0
1894.....	1,250	500	500	194	444	40.0	40.0	15.5	35.5
1895.....	1,250	622	622	230	1,230	49.8	49.8	18.4	98.4
1896.....	1,250	731	731	240	240	58.5	58.5	19.2	19.2
1897.....	1,250	1,140	1,140	240	240	91.2	91.2	19.2	19.2
1898.....	1,260	1,305	1,305	280	780	104.4	104.4	22.4	62.4
1899.....	1,500	2,715	2,715	380	1,830	181.0	181.0	22.0	122.0
1900.....	2,583	3,614	3,614	500	500	139.9	139.9	19.4	19.4
1901.....	3,250	2,750	2,750	620	1,620	84.6	84.6	19.1	49.8
1902.....	3,250	3,688	3,688	760	2,760	113.5	113.5	23.4	84.9
1903.....	3,250	2,786	2,786	920	2,920	85.7	85.7	28.3	89.8
1904.....	3,250	2,560	2,560	960	960	78.8	78.8	29.5	29.5
1905.....	3,250	5,371	5,371	960	960	165.3	165.3	29.5	29.5
1906.....	5,500	7,775	6,225	1,140	1,140	141.4	113.2	20.7	20.7
1907.....	6,250	(121)	(121)	1,200	1,200	(1.9)	(1.9)	19.2	19.2
1908.....	6,250	(1,034)	(1,034)	1,200	1,200	(16.5)	(16.5)	19.2	19.2
1909.....	6,250	2,090	2,090	1,200	1,200	33.4	33.4	19.2	19.2
Dec. 31:									
1910 ⁵	6,250	4,534	3,384	1,700	1,700	72.5	54.1	27.2	27.2
1911.....	6,250	3,280	2,480	1,500	1,500	52.5	39.7	24.0	24.0
1912.....	6,250	4,853	2,567	1,500	1,500	77.6	41.1	24.0	24.0
1913.....	6,250	5,672	3,172	1,500	1,500	90.8	50.8	24.0	24.0
1914.....	6,250	3,171	2,671	1,500	1,500	50.7	42.7	24.0	24.0
1915.....	6,250	3,477	2,827	1,609	1,609	55.6	45.2	25.7	25.7
1916.....	6,250	3,799	2,325	2,100	2,100	60.8	37.2	33.6	33.6
1917.....	6,250	4,902	2,402	2,100	2,100	78.4	38.4	33.6	33.6
1918.....	6,250	3,710	2,610	2,400	2,400	59.4	41.8	38.4	38.4
1919.....	6,250	3,489	3,489	2,400	2,400	55.8	55.8	38.4	38.4
1920.....	18,750	4,068	4,068	3,172	3,172	21.7	21.7	16.9	16.9
1921.....	21,250	4,324	4,324	3,500	3,500	20.3	20.3	16.5	16.5
1922.....	21,250	5,045	4,645	3,500	3,500	23.7	21.9	16.5	16.5
1923.....	36,250	7,192	7,192	5,000	5,000	19.8	19.8	13.8	13.8
1924.....	36,250	11,963	8,400	5,000	5,000	33.0	23.2	13.8	13.8
1925.....	36,250	20,117	13,049	5,625	5,625	55.5	36.0	15.5	15.5
1926.....	36,250	20,352	14,574	7,500	7,500	56.1	40.2	20.7	20.7
1927.....	36,250	22,523	17,356	\$ 56,250	\$ 56,250	62.1	47.9	\$ 155.2	\$ 155.2
1928.....	36,250	21,957	19,708	11,250	11,250	60.6	54.4	31.0	31.0
1929.....	60,417	26,995	26,995	23,500	23,500	44.7	44.7	38.9	38.9
1930.....	118,750	15,625	15,625	23,250	23,250	13.2	13.2	19.6	19.6
1931.....	126,250	10,816	10,816	10,500	10,500	8.6	8.6	8.3	8.3
1932.....	126,250	(12,626)	(12,626)			(10.0)	(10.0)		
1933.....	126,250	(13,773)	(13,773)			(10.9)	(10.9)		
1934.....	126,250	(7,752)	(7,752)			(6.1)	(6.1)		
1935.....	126,250	2,620	2,620			2.1	2.1		
1936.....	126,250	18,698	18,698	16,500	16,500	14.8	14.8	13.1	13.1
Total.....	1,341,341	239,052	200,317	204,835	213,585	17.8	14.9	15.3	15.9

¹ Represents the annual average investment on basis of the balances at the 15th day of each month, and including cash paid in for \$15,000,000 par value of preferred stock distributed to common-stock holders on Nov. 17, 1915, without additional cash investment on their part, and which, in effect, was converted into common stock in March 1920.

² Includes dividends on 150,000 shares of preferred stock distributed to common stockholders on Nov. 17, 1915, without additional investment on their part and which were, in effect, converted into common stock in March 1920.

³ 18-month period.

⁴ 11-month period.

⁵ 13-month period.

⁶ Includes special dividend of \$48,750,000.

Parentheses denote red figures.

SOURCE: Exhibit 2000-B, table 75, p. 295, and exhibit 2000-C, schedule 4, sheet 1.

Reconciliation of Rates of Return Earned on Investment With Those Earned on Common Stock.

The highest rate of return earned by Western Electric on its net investment during the period from 1886 to 1930, inclusive, was 24.41 percent in 1887. The average return on net investment for the entire 45-year period was 9.42 percent. These facts raise the question as to how the company could pay cash dividends of more than 15 percent on the average cash paid-in capital of common-stock holders and at the same time accumulate a surplus.

The answer to this question lies partially in the fact that the company's investment includes a large element which represents the reinvestment of accumulated earnings, in the form of surplus, and of reserves, which have cost it nothing in the form of interest or dividends, and partially in the fact that the part of the company's investment financed through the sale of bonds and through borrowing from the Employees' Pension Fund has cost it much less than 9.42 percent each year; probably not more than 5½ percent on the average. To the extent that any appreciable portion of these assets was financed at costs lower than these average rates, earned on investment, the effect has been to increase the return on common stock compared with that on total investment. The pressure of this leverage was admitted by a member of the Comptroller's Department of Western Electric Co.

On August 31, 1925, T. K. Stevenson, assistant comptroller, wrote a memorandum to J. L. Kilpatrick, vice president, in regard to the company's earnings, dividends, and capitalization, which read in part as follows:

The accumulation of \$18,813,000 surplus from operating earnings in excess of dividends over 9 years and 10 months since the formation of the New York Co. has been accomplished while earning only 6.1 percent on the average investment for the whole company. * * * In other words, this is due to the capital structure of the Western Electric Co., in which part of the capital during the period has been provided for at comparatively low cost, such as by 5-percent bonds, and a part at no capital cost, such as through undistributed earnings and reserves.

The following tabulation indicates how the financing of approximately 80 percent of the average investment by funds obtained from sources other than capital stock issues increased the rate of return for 1926, after appropriations for reserves, from 9.05 percent on total average net investment to 40.20 percent on that part of the investment relating to the average cash paid in on the common stock outstanding during the year:

Particulars	Average net investment ¹	Earnings on average investment	
		Amount	Percent
Total for year 1926.....	\$181,605,762	\$16,432,000	9.05
Deduct: Average amount financed by funds obtained from sources other than cash paid in by common-stock holders, represented by:			
Long-term debt.....	35,000,000	1,750,000	5.00
Other liabilities.....	34,992,393	108,000	.31
Reserve for contingencies.....	6,641,767		
Unappropriated surplus.....	52,471,602		
Total.....	129,105,762	1,858,000	1.44
Average balance relating to recorded value of no-par common stock.....	52,500,000	14,574,000	27.76
Deduct: Excess of average recorded value of common stock over average paid-in capital, resulting from the capitalization of surplus.....	16,250,000		
Balance relating to average cash paid in by common-stock holders.....	36,250,000	14,574,000	40.20

¹ Represents average total assets, including plant at depreciated book value.

A similar reconciliation of the rate of return earned on average net investment and on cash paid in by common-stock holders for the year 1936 is shown in the following tabulation:

Particulars	Average net investment ¹	Earnings on average investment	
		Amount	Percent
Total for year 1936.....	\$200,925,569	\$19,906,000	9.91
Deduct: Average amount financed by funds obtained from sources other than cash paid in by common-stock-holders, represented by:			
Other liabilities.....	43,545,584	1,208,000	2.77
Operating reserves.....	443,743		
Unappropriated surplus.....	14,436,242		
Total.....	58,425,569	1,208,000	2.07
Average balance relating to recorded value of no-par common stock.....	142,500,000	18,698,000	13.12
Deduct: Excess of average recorded value of common stock over average paid-in capital, resulting from the capitalization of surplus.....	16,250,000		
Balance relating to average cash paid in by common-stock holders.....	126,250,000	18,698,000	14.81

¹ Represents average total assets, including plant at depreciated book value.

Return on American Co.'s Investment in Western Electric Co.

The American Telephone & Telegraph Co. owned 99.42 percent of Western Electric Co. common stock as of December 31, 1935. This condition of complete control by the American Co. has not been true during the whole period since 1882. Until 1907 the American Co. and its predecessor controlled about 60 percent or less of the stock. It was after Vail's accession to the presidency of the American Co. in 1907 that the equity ownership was increased, in 1908 to over 80 percent, and in 1912 to 96 percent. Consequently, the American Co. did not receive all of the dividends paid by Western Electric Co. of Illinois from 1882 to 1915, and Western Electric Co., Inc., of New York, from 1915 to 1936, although as a whole it received the major part of such dividends. During the life of Western Electric Co. of Illinois from 1882 to November 17, 1915, the date of the reorganization of this company, total cash dividends of \$20,579,000 were paid, of which American Bell and American Telephone & Telegraph Co. received \$15,200,000, or 74 percent of dividends paid. During the period from November 18, 1915, to December 31, 1936, Western Electric Co., Inc., of New York paid dividends in the amount of \$192,055,000, of which the American Co. received \$183,633,000, or 96 percent of the total dividends paid by Western during that period.⁴⁰ During the whole period from 1882 to the end of 1936, the two Western Electric companies paid total dividends of \$212,634,000, of which American Bell Telephone Co. and American Telephone & Telegraph Co. received \$198,833,000, or 94 per cent of the total dividends paid during this time.

Discussion of the rate of earnings of Western Electric Co. on paid-in capital showed the results that were achieved by the company per unit of capital-stock money actually received in cash for its corporate purposes. This point of view is significant in evaluating Western Electric Co.'s performance in the manufacture and sale of telephone equipment to other Bell companies. From the point of view of the American Co., however, which is the principal investor

⁴⁰ See exhibit 2090-B, p. 309.

in the stock of Western Electric Co., the interesting fact is the extent of profits that the controlling company has made on its investment in the stock of Western Electric Co. as distinguished from the income on paid-in cash capital that Western has obtained for this stock. There is a difference between these two approaches, because the American Co. and American Bell Telephone Co. paid prices on the acquisition of Western Electric stock from minority holders which were at times in excess of paid-in capital per share. Consequently, the American Co.'s return on its investment in Western Electric stock is somewhat lower than the return of Western Electric Co. on paid-in capital. In the balance sheets presented in Western's annual reports to stockholders for the years ending December 31, 1935, 1936, and 1937, the company's outstanding capital stock is shown as follows:

Capital (represented by 6,000,000 shares, without par value, authorized and outstanding)

Cash paid in by stockholders	\$141, 000, 000
From surplus	1, 500, 000
Total	142, 500, 000

An analysis of the transactions recorded in the books of accounts of Western and its predecessor indicates that \$126,250,000 in cash and property, including \$200,000 for the initial Bell license, was paid into the treasury of the companies for the presently outstanding common stock. This amount is computed as follows:

Particulars	Common and 6 percent preferred stock issued		
	Shares issued	Issued for cash and property	Issued for other purposes
Western Electric Co. of Illinois, issued 1882-1915:			
To American Bell for license	2, 000	\$200, 000	
For cash and property	80, 500	6, 050, 000	
Stock dividends	87, 500		\$8, 750, 000
Total	150, 000	6, 250, 000	8, 750, 000
Western Electric Co., Inc., of New York:			
Issued in 1915 to stockholders of predecessor:			
6 percent preferred, par value \$100 per share	150, 000	6, 250, 000	8, 750, 000
Common, no par value	150, 000		
6 percent preferred stock issued to stockholders in 1917 at par	150, 000	15, 000, 000	
6 percent preferred stock called in 1920 at \$120 per share ¹	(300, 000)	(36, 000, 000)	
Common stock sold to stockholders in 1920 at \$180 per share ¹	200, 000	36, 000, 000	
Common stock sold to stockholders in 1922	150, 000	15, 000, 000	
Increase in no par common shares resulting from stock dividend in 1925, and split-up in 1927	3, 250, 000		
Common stock sold to stockholders 1928-31	2, 250, 000	90, 000, 000	
Total	6, 000, 000	126, 250, 000	8, 750, 000

¹ These transactions, in effect, constituted a conversion of the 300,000 shares of 6 percent preferred stock into 200,000 shares of common stock of no par value.

Parentheses denote red figures.

As of December 31, 1935, the American Co. held 99.42 percent of Western's outstanding capital stock at a recorded investment of \$144,192,338.⁴¹

It has been shown previously in this section that Western Electric Co. paid generous dividends calculated upon the basis of paid-in

⁴¹ See exhibit 1362-F, table 13, p. 1356.

capital. Dividends, however, do not fully reflect the return on the American Co.'s investment in the common stock of Western. First, the rate of return to the American Co. should be calculated on its investment in the stock of Western, and not on paid-in capital; and, second, the equity of the stockholder in the undistributed earnings of Western must be considered in evaluating the profitableness of the investment. Four bases have been used in computing the rate of return, to reflect the profitableness of the American Co.'s investment in Western Electric Co. These bases may be defined as follows:

1. Ratio of cash dividends received to average cash investment.
2. Ratio of equity in annual earnings to average cash investment, before and after appropriations for reserves.
3. Ratio of dividends received plus increment in the value of the investment to average cash investment.
4. Ratio of equity in annual earnings, before and after appropriations for reserves, to the American Co.'s average equity.

Table 105 has been prepared to show the profitableness of Western Electric Co. to the American Co., calculated on all four of the aforementioned bases. All four measures emphasize the fact that this investment of the American Co. has been a very profitable one.

The ratio of cash dividends received to average cash investment has been the least erratic of the four ratios under consideration, remaining at a high level during the whole period 1882 to 1930, the average during this period being 21 percent. This steady performance was due to the fact that dividends are amenable to the control of the company's board of directors. Some of the earnings of profitable years were reinvested in the business, and were then used to pay dividends when cash was available in some of the less profitable periods. As a result, dividends were passed in only 6 years during the entire 55-year period from 1882 to 1936, namely, in 1883, 1884, and 1932-35, inclusive.

The ratio of the American Co.'s equity in the annual income of Western Electric to the American Co.'s average cash investment reflects the large profits which were made during most of the 55-year period, particularly from 1882 to 1906 and from 1910 to 1930. For the whole period, 1882 to 1930, the annual average rate of return on this basis before appropriations for reserves was 28 percent and after such appropriations it was 23 percent. In the years 1882 to 1898 it was 73 percent. From 1899 to 1906 it was 140 and 133 percent, respectively. There was a recession during the years 1907 to 1909, when the equity of the American Co. in Western Electric Co. earnings showed only 4 percent return upon the American Co.'s investment. From 1910 to 1915 the ratio of equity in annual earnings, before and after reserve appropriations, to average cash investment was 27 and 19 percent, respectively. During the years of severe decline in business from 1931 to 1936 there was a net deficit shown, although the years 1931, 1935, and 1936 showed a net income. Considering the whole period, 1882 to 1936, including the 6 years of recession previously mentioned, the ratio of annual dividends received to American Co.'s average cash investment was 12 percent. The ratio of equity in annual earnings, before and after reserve appropriations, to such average cash investment was 14 and 11 percent, respectively.

TABLE 105.—*Annual rates of return on investment of American companies in stocks of Western Electric Co., Inc. (New York), and predecessor company, by periods of growth, years 1882 to 1936, inclusive.*

Periods of growth (years)	Description	Ratio of cash dividends received to average cash investment	Ratio of equity in annual earnings to average cash investment		Ratio of cash dividends plus investment in investment to average cash investment	Ratio of equity in annual earnings to average stockholder's equity	
			Before appropriations for reserves	After appropriations for reserves		Before appropriations for reserves	After appropriations for reserves
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)
		<i>Percent</i>	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>
1882-98.....	Gradual growth.....	20	73	73	75	17	17
1899-1906.....	Very rapid growth.....	28	140	133	138	21	20
1907-09.....	Recession.....	14	4	4	7	1	1
1910-15.....	Recovery and resumption of gradual growth.....	10	27	19	21	11	7
1916-27.....	Rapid growth.....	23	26	20	26	13	10
1928-30.....	Very rapid growth.....	23	26	25	27	16	15
1931-36.....	Drastic decline and partial recovery.....	3	(.3)	(.3)	(.2)	(.2)	(.2)
SUMMARY							
1882-1930.....		21	28	23	27	13	11
1931-36.....		3	(.3)	(.3)	(.2)	(.2)	(.2)
1936.....		12	14	14	13	12	12
1882-1936.....		12	14	11	13	8	7

Parentheses denote red figures.

SOURCE: Exhibit 2090-B, table 80, p. 317; table 81, p. 323; table 82, p. 326; table 83, p. 327; and exhibit 2090-C, schedule 4, sheet 1.

The results obtained by the American Bell Telephone Co. and American Telephone & Telegraph Co., measured on the various bases included in table 105, are given graphic representation in chart 15.⁴² By whatever measure these results are viewed, the American Co. has received an unusually high return on its investment. On a much smaller volume of sales than during some previous periods, in 1936 and 1937 Western's reported profits were \$18,698,049 and \$19,514,197, respectively. Dividends received by the American Co. from Western were \$16,406,431 in 1936 and \$17,898,004 in 1937, equivalent to 11.38 and 12.41 percent, respectively, on its average recorded investment in common stock of Western for these years, and reflected results commensurate with the average performance of the whole period 1882-1936.

The large profits made by Western were apparently a source of embarrassment to the American Telephone & Telegraph Co. management. As early as 1906 the matter was mentioned by F. P. Fish, president of American Telephone & Telegraph Co., to E. M. Barton, president of Western, when he wrote in a letter dated March 19, 1906:

The Western Electric Co. is making too much money, and at the present time it would be enormously harmful to that company and to our general interests if it were known what its profits were. I trust that there will be no information given until matters are in better shape.

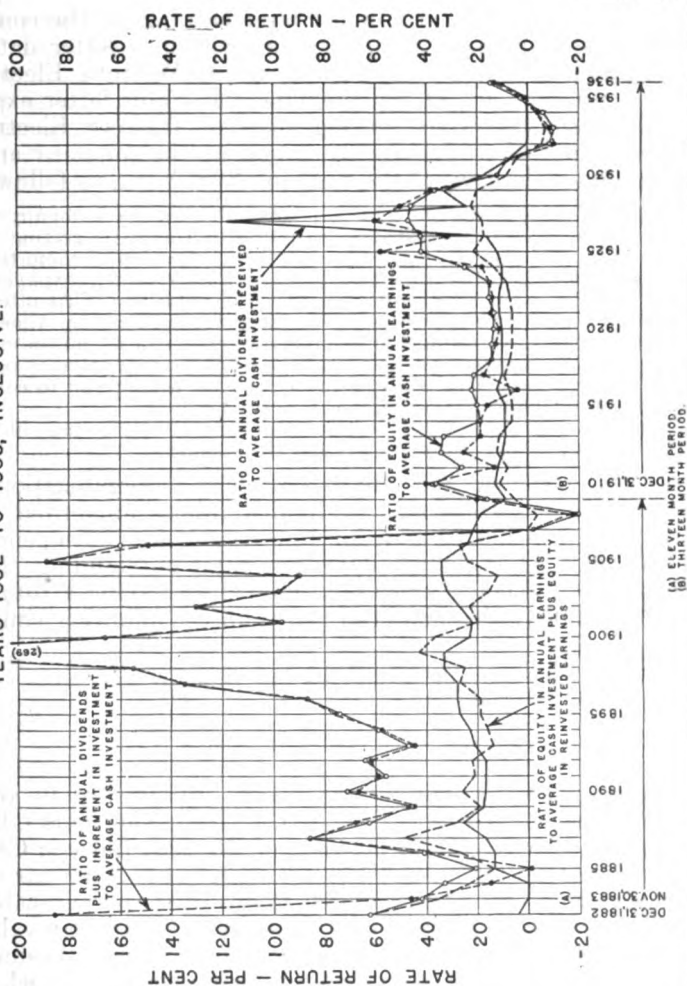
I think it well for you to destroy this letter.

The information which President Barton had given out for publication was nothing more than a tabulation of the annual sales of the

⁴² Table 105 gives summary ratios for significant periods. Chart 15 presents the same information graphically on an annual basis.

CHART 15.

RATES OF RETURN ON INVESTMENT OF THE AMERICAN COMPANIES
IN THE WESTERN ELECTRIC COMPANY, INCORPORATED
AND PREDECESSOR COMPANY
YEARS 1882 TO 1936, INCLUSIVE.



company for a period of years. This was in connection with a request from the Boston News Bureau for the following information:

1. The amount of net earnings for a series of years back, year by year.
2. The amount of capital stock outstanding during the same period.
3. The number of shares in your company (Western Electric Co.) now owned by the American Telephone & Telegraph Co.

President Barton advised President Fish that the request for this additional information had been ignored.

Another indication of how the large earnings of the company have at times embarrassed its officials is given in a letter dated April 7, 1915, from H. B. Thayer, president of Western Electric Co., to Samuel Scoville, Jr., of Philadelphia, Pa. This letter explains some of the reasons why the management of Western Electric Co. (an Illinois corporation) decided to reorganize the company and to incorporate under the laws of the State of New York, as follows:

There are various reasons why it is advisable for the company to make this change. One is that the taxation situation in Illinois is getting to be almost impossible. The laws are not clear and the application of them takes the form of a sort of legalized blackmail, particularly on the larger taxpayers. This law in the State of New York under which we propose to incorporate seems to be admirably suited for our purpose. We have wanted for some time to capitalize our surplus but have wanted to avoid the publicity of a "melon cutting." For obvious reasons we want as little publicity to this proposition as possible, either before or after the event, which is my reason for asking you to consider this in the light of a confidential communication from me.

I have no doubt about this being not only to the advantage of the company but to the advantage of each individual stockholder.

At the date of the above-mentioned reorganization, Western Electric Co.'s surplus and undivided profits amounted to approximately \$25,000,000, in addition to a reserve for contingencies of some \$3,700,000. At the same date, the total outstanding capital stock consisted of 150,000 shares of common stock having a total par value of \$15,000,000, which had been issued for the following considerations:

Consideration:	Par value
License issued by American Bell.....	\$200, 000
Cash and property.....	6, 050, 000
Stock dividends.....	8, 750, 000
Total.....	15, 000, 000

The so-called "melon cutting" was accomplished by organizing a new corporation, Western Electric Co., Inc. (New York), to take over the assets, liabilities, and business of Western Electric Co. (Illinois). The new corporation issued 150,000 shares of its \$100 par value 6 per cent preferred stock and 150,000 shares of its no-par value common stock in exchange for the 150,000 shares of \$100 par value stock of the Illinois corporation. In its books of account, Western recorded the initial 150,000 shares of no-par value common stock at various amounts through transfers to and from surplus, the net effect to the end of 1936 being a transfer of \$1,500,000 to the capital stock account, as reflected in its annual report to stockholders for that year.

For all practical purposes, the new corporation and its predecessor company may be considered as one company. The new corporation continued the same business carried on by its predecessor with the same personnel and the same assets and liabilities, with the exception of the changes in capitalization referred to in the preceding paragraph.

After the reorganization in 1915, the company's earnings continued to grow even more rapidly than before. During the 12-year period from January 1, 1916, to December 31, 1927, recorded net income after appropriations for reserves amounted to \$92,232,000. Regular cash dividends paid on common stock amounted to \$8 per share per annum in 1916 and 1917 and \$10 per share per annum from 1918 to 1927. Total regular common and preferred dividends paid during the period from January 1, 1916, to December 31, 1927, aggregated \$57,596,000, which accounted for 62.45 percent of the net income. Thus, total net income exceeded regular common and preferred stock dividend requirements during this period by \$34,636,000, despite the maintenance of high dividend rates.

The net earnings grew so rapidly that by 1924 the regular annual dividends of \$10 per share, on the common stock outstanding at that time, absorbed less than half of the annual net income. Furthermore, budget indications were that earnings would continue to increase rapidly during the next 4 or 5 years. The management desired to distribute a larger proportion of its annual earnings but were anxious to avoid certain aspects of the publicity which would result from increasing the annual dividend rate above \$10 per share. Consequently, a series of studies were begun in 1925 to determine how and to what extent the company's capitalization could best be increased in order that larger dividend payments might be made without increasing the annual dividend rate. As a result of these studies, the shares of common stock outstanding were increased, first in September 1925, from 500,000 shares to 750,000 shares by means of a 50 percent stock dividend, and again in May 1927, from 750,000 shares to 3,750,000 shares by means of a 5-for-1 stock split.

As a result of the first stock dividend the company was able to increase its annual dividend payments from \$5,000,000 to \$7,500,000 without making any change in the annual dividend rate of \$10 per share. Notwithstanding these increased dividend payments, operating earnings and other profits continued to pile up and by 1927 the management evidently decided that the time had come for another "melon cutting."

On December 31, 1927, a special dividend of \$48,750,000 was paid. American Telephone & Telegraph Co., as the holder of 98.34 percent of the outstanding common stock of Western Electric Co., received \$47,938,865 of this dividend.

As in the case of the previous "melon cutting," the management made strenuous efforts to avoid adverse publicity in connection with this distribution, which amounted to \$97.50 per share on the basis of the 500,000 shares of common stock outstanding before the stock dividend of September 1925; \$65 per share on the basis of the 750,000 shares outstanding after the stock dividend of September 1925, but before the 5-for-1 stock split of May 1927; and \$13 per share on the basis of the 3,750,000 shares outstanding after the split.

From the figures in the preceding paragraph, it is quite evident that the stock split and, perhaps, the 50 percent stock dividend, were made in anticipation of this special distribution in order to enable the company to refer to the distribution as a special dividend of only \$13 per share. Even that amount per share seems to have required considerable explanation in an attempt to justify the payment. The methods adopted in making this distribution, and the preparations which were

made far in advance of the actual payment in order to build up a defense for it, were elaborate and may be summarized briefly as follows:

(a) In addition to the stock dividend and the stock split just referred to, the company announced in its annual report to stockholders for the year 1926 that a new subsidiary, Electrical Research Products, Inc., had been organized to take over that portion of the business and assets of Western Electric Co., Inc., not related to the manufacture and distribution of telephone apparatus and supplies.

(b) Effective January 1, 1927, the following assets were transferred to the Products Co.:

Investments:

Stock of Graybar Electric Co.....	\$6, 699, 000	
Stock of Northern Electric Co., Ltd.....	1, 370, 000	
Stock of Western Electric Co., Ltd., of London....	1, 000	
		<hr/>
Accounts receivable, less accrued liabilities.....		\$8, 070, 000
Marketable securities (U. S. Government bonds).....		1, 299, 000
Cash.....		30, 693, 000
		<hr/>
Total.....		1, 000, 000
		<hr/>
Total.....		41, 062, 000

Just what relationship the marketable securities and cash, amounting to \$31,693,-000, had to "that portion of the Western Electric business and assets not related to the manufacture and distribution of telephone apparatus and supplies," was not explained.

(c) The Products Co. issued 750,000 shares of its no par value common stock to Western Electric as consideration for the assets shown in the above summary and certain patents, et cetera, which were carried at no value.

(d) Western Electric valued the 750,000 shares of the Products Co.'s stock at \$41,062,000, which was the recorded value of the assets given in exchange.

(e) The Products Co. assigned a stated value of \$1,000,000 to its 750,000 shares of no par value common stock outstanding and designated the remaining \$40,-062,000 received from Western Electric as paid-in surplus.

(f) During the year 1927, the Products Co. increased its surplus, mostly through the revaluation of its investments and the sale of certain options, from \$40,062,000 to approximately \$50,250,000.

(g) Out of this surplus, the "1-year-old" Products Co. declared dividends in December 1927, amounting to \$48,750,000. Payment was made in cash and marketable securities, substantially the same marketable securities which were originally received from Western Electric. This dividend reduced the net worth of the Products Co., as of December 31, 1927, to approximately \$2,500,000, which was represented by the following:

750,000 shares of no par value common stock at stated value of....	\$1, 000, 000
Surplus.....	1, 500, 000
	<hr/>
Total.....	2, 500, 000

(h) Accordingly Western Electric reduced the recorded value of its investment in the Products Co. from \$41,062,000 to \$2,250,000 by charging the difference of \$38,812,000 to surplus. Western Electric then distributed the \$48,750,000 received from the Products Co. to its own stockholders by means of a special dividend.

(i) In its annual report to stockholders for the year 1927 Western Electric refers to this distribution as a special dividend of \$13 per share, representing accumulated profits over a period of 40 years from its foreign business and from other business not related to the manufacture of telephone apparatus and supplies.

In summarizing the various methods used by the company in disposing of its surplus earnings (accumulated earnings in excess of the very liberal regular dividends), it is interesting to note how the changes in these methods followed the changing times, particularly in regard to the growing public sentiment that large corporations have no right to consider their affairs as strictly private matters in which the general

public has no concern. During the early years, the company made a practice of disposing of excess earnings through large and frequent stock dividends, and adopted a policy of secrecy in respect to its earnings and financial affairs, as evidenced by the letter of instructions issued by President Fish, of the American Co., to President Barton, of the Western Co. Prior to 1909, the company's annual reports to stockholders did not even contain a statement of earnings and expenses. After the company began including regular financial statements in its published annual reports, it became necessary to explain any violent fluctuations in earnings or in surplus. The first special distribution after this change in policy was accomplished by the reorganization and recapitalization of the company as explained in President Thayer's letter of April 7, 1915. The last and largest of these special distributions was made in December 1927, and was accomplished by the series of accounting transactions described.

Summary.

The facts developed in this chapter show that the Bell System has been an exceptionally profitable enterprise since its inception 60 years ago. The stockholders of the parent companies of the Bell System, namely, American Bell Telephone Co. until 1899, and American Telephone & Telegraph Co. since 1900, have participated, as equity owners, in high dividends and stock rights of this very profitable business.

With the exception of the depression years 1932-35, the American Co. was able to accumulate a large surplus in spite of the liberal distributions to its stockholders. Even in those depression years the dividend requirements would have been covered fully by the net recorded income of the company, except for the fact that during 1929, 1930, and 1931 a large number of American Co. shares were issued and the funds thus obtained were invested in plant. The construction program was carried on because it had been planned before, and had already been partly executed when the business depression started. The inability of the American Co. to earn during the depression years enough to cover its dividend requirements was probably due as much to plant and capitalization expansion as to the decline in revenues. In 1929 the American Co.'s outstanding common stock averaged 13,000,000 shares, upon which the dividend payments at \$9 per share were a little over \$116,000,000; whereas the recorded net income during that year was \$166,000,000, and the equity of the American Co. in the Bell Telephone System's net income was \$198,000,000. In 1933 the dividend requirements, on account of expansion of capitalization by over 6,000,000 shares to 18,662,000 shares, had grown to \$168,000,000; whereas the net recorded income had declined in 1933 by about \$29,000,000, from the high of 1929, to \$137,000,000, and the Bell Telephone System net income available to the American Co. had declined by \$84,000,000 to \$114,000,000. Thus, with the same number of shares outstanding as in 1929, the American Co.'s equity in the net income of the Bell Telephone System would have been only \$2,000,000 short of dividend requirements in the depression year of 1933, whereas the recorded net income would still have exceeded the dividend requirements by \$21,000,000. Instead, however, Bell Telephone System net income available fell

short of dividend requirements by \$54,000,000, and net recorded income fell short by \$31,000,000, because of expanded capitalization. This situation is merely the reflection upon the American Co.'s equity owners of the condition of expansion of plant of associated companies that was described in section 4 of this chapter.

Thus, except for the enormous increase in plant investment and capitalization following the year 1929, the earning record of the American Co. for a long number of years appears to have been unusually high for a system engaged in rendering public service.

PART II
CURRENT REGULATORY PROBLEMS
SUMMARY AND FINDINGS
AND
CONCLUSIONS AND RECOMMENDATIONS

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CHAPTER I

CURRENT REGULATORY PROBLEMS

The concentration of the Nation's telephone business, and in particular of its interstate telephone business, in the hands of the Bell Telephone System is such that, whereas the problem of regulation is one of large magnitude, it is relatively simplified by reason of this very integration, as contrasted with the railroad, gas, electric-power, maritime, and motor-carrier fields of Federal regulatory effort. The fundamental problem underlying the provision of effective regulation in the interstate telephone field appears to consist largely of developing ways and means, as well as positive and effective machinery, for the continuous acquisition of the basic factual data, and of providing methods for the prompt and adequate digestion and analysis of such facts in such form and manner as to render Commission action thereon readily possible.

Analysis of the experience of numerous State commissions in connection with telephone regulation has disclosed that, whereas many States have given serious attention to such problems over a considerable period of years, they have at all times been seriously hampered in these efforts by the very organization of the Bell System, the parent corporation being beyond their jurisdiction, even from the fact-gathering viewpoint.

With the enactment of the Communications Act of 1934, however, the regulatory situation was radically altered. Concentration of authority over all phases of interstate telephone operations in this country in the Federal Communications Commission, under a broad statutory mandate, for the first time brought before a single regulatory body both the parent and the subsidiary entities of the Bell System's corporate pyramid, and for the first time made possible the adequate amassing of basic facts in relation to all phases of that system's Nation-wide operations. Ultimate facts not hitherto within the reach of the individual States are now obtainable through this Federal agency.

During the course of, and as an integral part of the telephone investigation, the Federal Communications Commission early in 1937 undertook to develop the fundamental data and background material relative to basic interstate telephone rate and regulatory problems, particularly as such issues are affected by Bell System methods and practices. Such action was motivated and necessitated by facts already developed by the investigation staff, and approximately 10 percent of the total appropriations of public moneys made available for this investigation by Congress was earmarked by the Commission and was used for the purposes of this specialized phase of the investigation. In this connection a "telephone rate and research department" of the investigation was established directly following the conclusion of the series of conferences between representatives of the Commission

and of the American Telephone & Telegraph Co. relative to the rates of that company's long-lines department, which had resulted in the placing in effect, as of January 15, 1937, of interstate telephone toll-rate reductions aggregating slightly in excess of \$12,000,000 per annum to the public.¹

In general, the work of the telephone rate and research department thus created consisted in a detailed examination and analysis of the facts relative to telephone rates and practices already brought together by the investigation staff; the gathering of additional facts of like character, and the development and analysis of particular legal, engineering, and accounting issues necessarily involved in the actual regulation of interstate telephone rates. Some of these issues (such as valuation, the rate base, the rate of return, and the treatment of depreciation) are common to all forms of public utility regulation; others (such as the allocation of telephone plant and expenses between localities and types of service; the "divisions" of revenues between operating companies and certain basic toll-rate structures) are peculiar to the telephone business, while still others (such as the "license contract" issue, Western Electric Co. prices and costs, and system rate "uniformity" problems) stem from the special characteristics and practices of the Bell Telephone System. Certain of these issues have been given detailed consideration in this report.

During the course of slightly over a year of active effort, this department of the investigation brought together and analyzed a large body of data and records relative to numerous phases of interstate rates and to Bell System operations and methods. The development of a complete factual background in connection with all phases of these issues was, of course, not possible during the relatively brief period that the department was in operation. Enough data were gathered, however, and the problems at hand were sufficiently examined to determine in what directions further emphasis seems required of the regulatory body, and also to determine the general course which future studies of such problems must apparently take.

In addition to the issues above mentioned, examination was made of the general propriety of existing rate levels and the "spread" of existing rates as between different classes of users; of the problem of price and cost trends on telephone property and equipment; of Bell System general operating results, of certain short-haul rate problems, and of methods of determining the extent and "spread" of potential interstate rate adjustments. Several of these studies were made the basis for special reports, which were reproduced and distributed to State commissions and other interested persons. A list of these reports will be found in appendix 3.

In its final report, the telephone rate and research department outlined its activities and pointed out numerous problems which must be faced in the development of positive interstate telephone rate regulation, their general implications being discussed and further funda-

¹ During the 2½ years which have elapsed since this important rate adjustment, the telephone-using public of the United States has benefited from that reduction to the extent of over \$30,000,000, a saving which may be contrasted with the total cost of this investigation of but \$1,500,000. Nor does this take into consideration the other interstate and intrastate telephone rate reductions of at least equal aggregate volume which may indirectly have resulted from the pendency of the investigation and the facts therein developed.

mental studies being suggested.² The work of the Federal Communications Commission through this department was exploratory in character, the reports in question having been developed as preliminary studies in a complex field hitherto largely untouched by the operation of Federal administrative processes. While in no sense final, these reports and the other data accumulated by this department afford a background for future Commission action, and point the way toward the effective development of adequate and positive regulatory procedures in this highly specialized field.

Early in the investigation, it was noted that, whereas the Federal Government had as early as 1910 (by the Mann-Elkins Act, 36 Stat. 544) vested certain interstate telephone toll-rate authority in the Interstate Commerce Commission, such regulation had in practice proved largely nugatory partly by reason of the lack of an effective statutory mandate, but also because of a lack of "appropriations sufficient to carry on an investigation." Indeed, such was the conclusion of the Congressional Investigating Committee which reported on this situation in 1934. That committee had then reported that "at the present time there is little, if any, Federal regulation of the rates, practices, and charges of the several branches of the communications industry," but had added that:

The importance of the (telephone) industry calls for actual and not nominal regulation. Telephone business is a monopoly—it is supposed to be regulated. Thus far regulation, particularly by the Federal Government, has been nominal largely because Congress has not made appropriations sufficient to enable the Interstate Commerce Commission to give effect to existing statutes.³

From its establishment in 1934, the Federal Communications Commission has endeavored, to the extent that appropriations and personnel have been available, to develop methods and machinery in its regular staff departments for the continuous consideration of many of the legal, accounting, and engineering issues involved in interstate telephone regulation. For the first time in the country's history a complete set of interstate telephone toll tariffs has been brought together through company filings; many rate inconsistencies have been called to the attention of the operating companies and have been rectified; accounting procedures and systems have been promulgated; reports and data have been accumulated; jurisdictional issues have been heard and determined; applications for construction permits have been considered, and in general the work of actual interstate

¹ In this department's final report these matters were discussed under the following headings:

1. Fundamental legal problems involved in the regulation of interstate telephone rates.
2. The rate of return problem, with special reference to the return properly allowable to the long-lines department.
3. The problem of depreciation, both in connection with operating expenses, and as a factor in the rate base.
4. The structure of and the philosophy underlying existing Bell System toll rates and practices.
5. The problem of separation of property, revenue, and expense.
6. The problem of divisions of toll revenue, where 2 or more companies participate in furnishing toll service.
7. The problem of securing greater uniformity in Bell System interstate telephone rate schedules.
8. The license contract problem, with special reference to servicing charges made against the long lines department of the American Telephone & Telegraph Co.
9. The problem of Western Electric Co. costs and prices.
10. Detailed telephone rate studies, including stimulation factors in connection with rate adjustments, and types of potential rate adjustments.
11. Interstate telephone toll operating data and results, including the problem of long-lines rental payments.

² See Preliminary Report on Communications Companies (H. Rept. No. 1273, 73d Cong. 2d sess. 1934) submitted pursuant to H. Res. 59, 72d Cong., 1st sess. (1932), and H. J. Res. 572, 72d Cong., 2d sess. (1933), commonly referred to as the "Splawn Report."

telephone rate and service regulation under the mandate of the statute has been commenced.

It has become apparent, however, not only as a result of this day-by-day regulatory effort, but also as a result of the telephone investigation that the issues involved in the regulation of interstate telephone rates are broad as well as intricate, and that highly organized effort will be essential to any adequate or effective permanent regulatory procedure. Efficient machinery for the gathering, digesting and presentation of all necessary facts must be devised and brought into continuous operation, and a carefully developed administrative organization must be set up in order to perform these specialized functions. The Splawn report of 1934 disclosed that Federal attempts to regulate interstate telephone operations prior to that date had proved largely ineffective because of (1) the lack of an adequate statutory background, and (2) the lack of adequate funds to carry on the effort in question. The first of these two elements was supplied by the Congress through the enactment of the Communications Act of 1934. In order to enable the Commission thus created to carry on and properly develop the exploratory work of the telephone investigation and to create the necessary machinery to carry out this mandate of Congress, provision for the other element must also be made.

In other words, it is apparent that effective interstate telephone rate regulation must primarily depend upon the provision of sufficient funds to give effect to the existing statutes, for the regulation of even the interstate phases of a \$6,000,000,000 Nation-wide industry demands an adequate force of experts trained and experienced in all phases of the problems at issue. The work of the telephone rate and research department of the telephone investigation may be considered as having been largely exploratory in character. The field was surveyed and the general limits of potentially essential organization and effort on the part of the Federal regulatory body were broadly delimited. In the department's published reports many of the special issues which confront the Federal regulatory authorities have been outlined; in the telephone investigation other problems were given detailed attention; the regular staff of the Commission has also brought together essential material and has attacked numerous individual problems, and the Commission is now possessed of basic data and has projected methods of operation upon which it may erect an adequate regulatory structure, dependent at all times upon the appropriation of funds sufficient to enable it to give full effect to the statute under which it operates.

The organization of the telephone rate and research department of the investigation enabled the Commission to give practical force during the course of the investigation to much of the material which had been gathered by the investigatory staff. This material was amplified through the efforts of the rate and research group, and, together with the additional data brought together by other members of the investigation staff and of the regular staff, affords an ample basis for the development of effective and continuous regulatory practices and machinery after the conclusion of the investigation. Only by means of the creation of such machinery may the work done by the investigation's staff, the facts brought out by the investigation, and the efforts already undertaken by this Commission in the direction of actual regulation be given positive significance in the future.

CHAPTER II

SUMMARY AND FINDINGS

Corporate History of the Bell System.

The history of the corporate development of the Bell System commenced with the ownership of basic or essential telephone patents by the parent company, acting first as licensor under such patents, and later also as owner of companies furnishing telephone service. The first licensees were, in general, individuals, partnerships, or companies, independent of the licensor, financed by interests local to the community in which they were licensed to furnish telephone service. The licenses were granted originally for a limited period, usually 5 years, and the licensor obtained an option to take over the licensee's business under conditions specified in the license. In 1882 the parent company adopted the policy of exchanging the short-term licenses for permanent licenses, receiving a substantial stock interest in the licensees as a consideration, thereby obtaining a vested interest in the business of furnishing telephone service as distinguished from its previous position as merely a licensor under patents. The interest in the operating companies acquired by the parent company under the provisions of the permanent license was increased through various means, including outright purchase of stock, in addition to the exercise of its preemptive rights. The present associated companies of the Bell System, usually covering entire States or groups of States, are the result of many mergers and consolidations in which the parent company of the Bell System consistently followed the policy of increasing its interest in the business of furnishing telephone service. The parent company has always reserved to itself that part of the operating telephone business relating to the furnishing of long-distance telephone service connecting the territories of the various licensees. Throughout the history of the Bell System the changing corporate structures have involved a parent company, subsidiaries, and subsidiaries of subsidiaries, but in general the practice of pyramiding securities of the various companies, as practiced by certain other utilities, has not been indulged in.

In 1881 the American Bell Telephone Co. acquired control of the reorganized Western Electric Manufacturing Co. for the announced purpose of assuring itself of a dependable source of supply of telephones and telephonic appliances. The reorganized company, Western Electric Co., and its successor, have continued as the manufacturing and supply department of the Bell System since that time. There are a number of subsidiary companies within the Bell System organized for the purpose of carrying on various activities, such as Bell Telephone Laboratories for research and development work; Electrical Research Products, Inc., for the exploitation of byproducts of research and development; and other corporations organized to hold

and manage certain real estate and buildings occupied by the administrative and research departments. There are also 30 corporations organized for the purpose of holding title to the property of the long lines department of the American Telephone & Telegraph Co. in certain States. There have been a number of other companies organized and dissolved during the history of the Bell System.

The corporate history of the successive parent companies shows only two occasions (in 1880 and in 1900) when surplus was capitalized by reorganization. The total amounts of these capitalizations of surplus, while significant as of the dates when consummated are, however, relatively small as compared with the financing from the sale of stocks and bonds of the holding company.

The corporate history of the associated companies has involved many consolidations and mergers but the scope of the present investigation was not large enough to undertake to analyze the effect of all of these. In the organization of the New England Telephone & Telegraph Co. there occurred substantial capitalization of intangibles. To what extent the same condition may have prevailed in the case of the remaining associated companies was not determined.

Growth of the Bell System.

The growth of the Bell System, measured in various ways, reflects the policy of the management during successive periods. From its early days, until the expiration of the basic patents, the growth was relatively slow, there being only 310,000 stations in service at the end of 1895. During this time the patent monopoly was in force and high rates for service prevailed, resulting in limited development and high profits to the operating companies and to the licensor company. With the expiration of the basic patents and the rise of competition, the picture changed rapidly. In meeting competition, rates were substantially reduced and the market broadened. The number of telephone stations and amount of telephone plant grew rapidly so that in 1920 there were 8,334,000 stations, with an annual revenue of \$458,000,000, as compared with 310,000 stations with an annual revenue of \$24,000,000 at the end of 1895. During the 1920 decade the competitive situation was harmonized to a great extent. The economic developments during this decade further encouraged telephone development with the result that by 1930 the number of telephones had increased to 15,682,000 and the annual revenue to \$1,152,000,000.

The general business decline following 1929 inevitably reacted on the telephone business, resulting in a decrease in the number of stations in service to 13,100,000 at the end of 1933, together with a great diminution in the extent of the use of toll facilities. At the end of 1937 there were 15,729,000 stations in service, which exceeded the previous peak of 1930 and reflected the improvement in business conditions since the low point of the depression in 1933.

The growth of the Western Electric Co., the manufacturing and supply department of the Bell System, paralleled that of the operating companies. During the period from 1882 to 1929, the recorded total assets of the Western Electric Co. increased from \$1,114,000 to \$308,721,000. Sales in 1886 amounted to \$1,382,000, and in 1929 to \$410,950,000. During the depression Western Electric sales declined in 1933 to a low point of \$69,511,000. By 1937 Western Electric sales had again increased to \$203,000,000.

Corporate and Capital Structure of the Bell System.

In the present corporate structure of the Bell System the American Telephone & Telegraph Co. is the parent organization, as well as the direct owner and operator of the interstate telephone facilities interconnecting the exchange and toll facilities of the associated and connecting companies. This company controls, through ownership of voting stock, 21 operating telephone companies commonly known as the associated companies.¹ It also owns the Western Electric Co. which is the manufacturer and supplier for the system. The Bell Telephone Laboratories, Inc., jointly owned by the American Co. and the Western Electric Co., carries on research and development work for the system. Electrical Research Products, Inc., a wholly owned subsidiary of the Western Electric Co., licenses nontelephonic products under patents owned by the system. These are the more important component companies of the Bell System. There were in all, at the end of 1934, 273 corporations in which the American Co. either had direct or indirect ownership of 10. percent or more of the voting securities, or had potential control through various other means. In 181 of these companies the American Co.'s ownership of the outstanding voting securities was 50 percent or more. Of these 181 companies 29 were inactive; 104 were telephone companies; and 48 were engaged in various nontelephonic fields. Twenty-one of these nontelephonic subsidiaries operate in foreign countries.

The corporate structure of the Bell System, although involving a large number of operating companies, is simple in comparison with many other enterprises of smaller magnitude; and does not, so far as our investigation discloses, enable it to evade taxation.

Regulation of telephone rates, as a whole, including rates for exchange, intrastate toll, and interstate toll and other communication services, is a complicated problem. It would be complicated under any circumstances since the integrated method of rendering the service requires the allocation of property, revenue, and expenses among different types of service. The difficulty is inherent in the nature of telephone service itself and in the divided responsibility for regulation of interstate and intrastate rates; and is to a great extent independent of the corporate structure employed. However, this corporate structure is such that individual States have frequently found themselves largely unable to secure essential and fundamental factual data in respect to numerous telephone regulatory problems, such as reliable manufacturing cost data and "license contract" costs. Only a Federal regulatory agency may effectively exercise the inclusive investigatory and regulatory jurisdiction over all of the essential members of the Bell System's corporate aggregate that will render possible adequate development and presentation of the facts in this connection.

The relationship of the various instrumentalities constituting the Bell System is the result of stock ownership supplemented by agreements. The relationship of Western Electric Co. to the operating units of the Bell System is such that opportunity is afforded for pyramiding of profits. If Western Electric Co. has made excessive profits on its sales of materials and equipment for the construction of operating telephone plant and if rates for service are adequate to earn a fair

¹ There are 23 associated companies but in 2 the stock ownership of the American Co. is less than a majority.

return on the cost of such property, a double profit to the holding company will result; first, from the manufacture and sale of telephone equipment and, second, from the earnings of the operating company. The courts have held that Western Electric prices are not controlling in the determination of either investment, reproduction cost, or fair value of property of operating telephone companies in the Bell System; and that reasonable costs of manufacture plus a fair profit, rather than the prices charged by Western should be the controlling cost factors in determining fair value for rate making purposes. This declaration by the courts lays a foundation for the solution but does not solve the problem of determining the reasonableness of Western Electric prices, as they are reflected in investment accounts and reproduction cost estimates relating to individual operating companies, since the records of Western Electric do not readily lend themselves to analysis for this purpose.

Management and Control of the Bell System.

The nature of control of the parent company of the Bell System falls into three general types during successive periods: First, the period during which the owners of the business were its officers and directors; second, the period during which the stock became more widely dispersed due to the inability of any small group to supply the capital needs of an enterprise of the magnitude of the Bell System, and during which period control was exercised by a particular group or groups of stockholders having substantial interests; and third, a period which may be characterized as "control by the management."

During the early period the stock of the parent Bell Co. was very closely held by a few individuals, who, as directors and executive officers, controlled the corporate policies. With the necessity for financing expansion, the stock ownership in the parent company became dispersed and the executive officers were selected by large stockholders and persons with substantial financial interests in the company. As the stock became more widely dispersed, it became increasingly difficult for any group of stockholders to control the selection of the executive personnel and in later years the management has been successful in perpetuating itself, through selection of directors and their election through proxy machinery. It is significant of the present dispersion of American Co. stock, that no individual stockholder holds as much as 1 percent of the more than 18,000,000 shares of American Co. stock outstanding. The stockholders, of course, still legally control the parent company, the American Telephone & Telegraph Co., but the actual selection of executive personnel has been made over a long period of years by the management itself as represented by the executive officers and the directors.

The central management of the Bell System represented by the directors and the executive officers of the American Co., and of the predecessor parent companies, has controlled the functions and operations of the system through various means: First, through the original short-term licenses under the basic Bell patents, through which local capital was obtained for the early exploitation of the telephone communications field; and later, through the perpetual licenses whereby the parent Bell Co., as licensor, not only derived substantial profits under the licenses, but also obtained a substantial vested interest in the communications business through stock ownership in the licensees.

This policy has been continued and now the parent Bell Co. owns voting-stock control of all except two of the operating licensee companies. In most cases, the ownership of voting stock by the American Co. is practically 100 percent of the outstanding voting stock. Some of the American Co.'s subsidiaries exist as separate corporate entities in order to satisfy legal requirements for the operation of telephone companies in various States. This is particularly true of the 30 corporations organized to own certain of the interstate toll properties of the long-lines department. These latter corporations have no function except to own the physical property of the long-lines department in the particular States involved, which is leased to the American Co. (long-lines department) for operation on a basis whereby the long-lines department obtains all the revenues and pays all the expenses of the individual State corporations. These revenues and expenses are not separately accounted for as to each of the 30 corporations.

The operations of the Bell System are directed by the officers of the American Co. through a system of informal instructions, suggestions, and recommendations from the heads of its departments to operating officers of the subsidiary associated companies. The separate corporate entity of the associated companies may be said to be merely a legal fiction from the standpoint of the practical direction of every operating function of the entire Bell System. This right of direction is, of course, inherent in the majority stock ownership. Under the exercise of these rights the American Co.'s direction of the subsidiary associated companies' operations extends even to the selection, promotion, and remuneration of their executive and administrative personnel. The effect of these conditions has been to make the personnel of these subsidiaries so highly sensitive to the parent company's staff that, in general, the expression of opinions or definite suggestions on the part of responsible members of the American Co.'s staff are accepted as controlling decisions by the executives and supervisors of these companies.²

Although representatives of the Bell System operating companies, and even of the American Telephone & Telegraph Co., have frequently asserted before State regulatory bodies that the respective operating companies of the system are to a large degree "independent," the fact remains that in respect to practically every detail of management, operation, and corporate policy the control exercised by the parent corporation and its representatives is stringent and singularly effective. From all points of view except that of bare legal corporate organization, the Bell Telephone System constitutes a single, unified undertaking, with effective Nation-wide control centered in officials of the American Telephone & Telegraph Co.

During the development of the telephone industry to its present size it has passed through changes in control from the condition under which the directors and officers held all or a majority of the stock of the company to the condition in which no stockholder or small group of stockholders is able to direct the policy of the company and therefore the control and management becomes the function of a group of self-perpetuating executive officers who select their own successors and prospective members of the board. This transition apparently

² In the case of two of the associated companies, the Cincinnati & Suburban Bell Telephone Co. and the Southern New England Telephone Co., the American Co. does not own control of the voting stock, but does have license contract relations with these companies, which are discussed later.

was completed with the management reorganization in 1907 which has been self-perpetuating since that date.

Management control of the associated companies by the officers of the American Telephone & Telegraph Co. has been made effective through written instructions, recommendations, and suggestions covering methods and practices, which are accepted as orders by the associated companies. The centralized management exercised by the general department of the American Co. controls the cost of property and operating costs of the Bell System operating companies to an extent which makes it extremely difficult for State Commissions to obtain a valid measure of the reasonable cost of telephone service. This American Telephone & Telegraph Co. management controls the prices of telephone apparatus and equipment purchased by the operating subsidiaries through its ownership of the Western Electric Co.; it controls changes in operating plant through joint ownership with Western of the system's technical unit, the Bell Telephone Laboratories; and it controls plant construction costs and operating expenses of the local companies through selection and standardization of plant construction and maintenance practices, traffic operating methods, commercial forecasts and long-range planning, and depreciation charges included in operating expenses. Because of this centralized management, effective State regulation cannot be accomplished by reliance entirely on records of the associated companies, but involves examination of the records of the American Co., Western Electric, and Bell Telephone Laboratories, with respect to which State jurisdiction is limited. Hence effective regulation can be accomplished only by cooperative effort of State commissions and the Federal Communications Commission.

Elimination of Competition.

The Bell System has consistently pursued the policy of obtaining control of a Nation-wide unified telephone system. Since its inception the watchword has been "One System, One Policy, Universal Service." In achieving its present dominant position, the Bell System has been successful in the elimination of effective competition. There is today no competition, worthy of the name from the Nation-wide standpoint, with the unified Bell System.

The Bell System dominance in the telephone field was first threatened by the Western Union Telegraph Co., which owned control of patents under which it developed commercial telephone service in a large number of communities, in many cases in competition with Bell licensees. This threat was eliminated through the execution of the 1879 agreement between the National Bell Telephone Co. and the Western Union group.

During the period subsequent to the execution of the agreement with the Western Union Co. in 1879, and prior to the expiration of the basic Bell patents in 1893 and 1894, the Bell System enjoyed a monopoly in the telephone communications field due to its patent position. During this period attempts to compete with the Bell System were met with infringement suits, in which the Bell System was the successful party. With the expiration of the basic Bell patents in 1894 competition became active and by 1907 the number of independently owned telephones had reached almost 2,987,000, substantially equal to 3,132,000 stations then owned by the Bell System.

The Bell System attempted to overcome such competition by various means: First, by an unsuccessful attempt to perpetuate its patent position through the Berliner patent on the microphone and through telephonic-appliance patents of the Western Electric; second, by rapid expansion of facilities to meet the competition of the independents and during 1907-13, through acquisition of competing systems and the prevention of financing of competitors through the influence of the Baker-Morgan banking interests, which were the financial sponsors of the Bell System. During the period 1912-21, Bell System policy of acquiring independents was modified to some extent in response to anticipated activities of the Department of Justice under the antitrust laws. The Bell System agreed, in the Kingsbury commitment, in effect, (1) to connect its interexchange toll facilities with all independent exchanges upon request; (2) to acquire no further competitive independent companies except upon a basis whereby Bell System would release as many Bell-owned stations as it might acquire from independents. It also provided for the sale by the American Co. of its lately acquired substantial stock interest in the Western Union Telegraph Co.

The conditions of the Kingsbury commitment proved unsatisfactory to both the Bell and independent companies and made it difficult to satisfy public demand for the elimination of duplicate telephone service. The Willis-Graham Act, adopted in 1921, was designed to permit the Bell and independent companies to adjust competitive conditions on a mutually satisfactory basis without running the risk of violating the antitrust laws. The passage of the Willis-Graham Act was followed by the Hall memorandum of June 14, 1922, setting forth the American Co.'s policies with respect to the acquisition of independent properties and with respect to the general relations between the Bell System and independent companies.

Since the date of the Hall memorandum the relations between the Bell System and the independents have been characterized not only by an attitude of cooperation on the part of Bell companies with independents in certain matters, but by a continuance of practices with respect to acquisition of independent properties and the divisions of revenues from interchanged business which are criticized by the independents as being inequitable. At the end of 1936 there were 18,516,211 telephone stations in the United States, of which 14,827,755 were Bell-owned, and 3,688,456 independently owned.

In the manufacturing field, the Western Electric Co. sells approximately 90 percent of all telephone apparatus, equipment, cable, and supplies sold in the United States. The remaining 10 percent is divided mainly among seven independent manufacturers. A substantial portion of the telephone apparatus and equipment manufactured by independent manufacturers is purchased by Western Electric Co. for resale to the associated companies.

Attempts at this late date to develop a strong, independent telephonesystem to compete with the Bell System would be futile. Protection of the rate-paying public by means of effective competition is now, and for a number of years has been impossible. Protection of that interest must be accomplished through effective governmental regulation of the telephone industry. Due to the Nation-wide nature of the telephone interests represented by the Bell System and the interrelation of the intrastate and interstate activities of the system, coopera-

tive efforts by the Federal Communications Commission and the State regulatory authorities are essential. This Commission may seek effectively to regulate interstate matters, including the manufacture and sale of telephone apparatus and equipment. Also, if properly manned and adequately financed, the Commission may render invaluable assistance to State regulatory commissions in supplying data essential to regulation of local telephone rates, services, charges, and practices, which data, because of jurisdictional limitations, State commissions have had difficulty in securing. The problem of regulating the Bell System is simplified because it entails supervision of a single unified Nation-wide utility service despite its varied corporate forms and diverse activities.

The License-Service Contract.

The license-service contract entered into between the parent Bell Co. and the operating telephone companies was an important instrument in the development of the Bell System. The contracts were, in the early days, not only the important source of revenue of the parent company, but were the foundation for control of the operating telephone companies. The present contract provides for the use of devices covered by Bell System patents and for the furnishing of certain services by the parent company to the operating company. Since the parent company now controls all but two of the associated companies by reason of majority stock ownership, the importance of the license-service contract today from the standpoint of regulation of telephone rates is the reasonableness of the payments made for services allegedly rendered by the parent company.³

The amounts paid by the operating companies as fees under the license-service contract were designated as rentals for telephone instruments and stated on a basis of a specified amount per instrument through 1901. Since that year, the basis for the payment of such fees has varied from 4½ percent of gross revenues in 1902 to 1½ percent at the present time. Until 1927, payments by the operating companies under the license-service contract included rental of telephone instruments owned by the American Co. The instruments were sold to the operating companies at the end of 1927 and the fee was reduced from 4 to 2 percent, and was further reduced to 1½ percent in 1929. The telephone instruments were sold to the associated companies at a price which was \$14,000,000 in excess of the recorded book cost to the American Co., less the reserve for accrued depreciation.

The services allegedly rendered by the American Co. to the operating companies, and for which it is compensated through payments under the license-service contract, are development and research, operation and engineering, patent protection, accounting, financing, and legal advice and assistance. In 1936 the operating companies made payments under the license-service contracts in the amount of \$14,857,382. This amount measures the extent to which operating expenses of the local companies have included the cost of research, development, and other activities of the American Co. The difficulty in determining the appropriate amount to be included in the operating expenses of the associated companies for the services rendered by the American Co. arises because the American Co. performs numerous functions in its capacity as owner of the associated companies, the cost of which

³ Other aspects of the license-contract relationship are discussed under chs. 7, 8, and 10.

should be met by American Co. stockholders and not included in operating expenses of the associated companies. No satisfactory method of segregating and separately accounting for the cost of these various activities has as yet been developed.

The American Co. should be required to keep its accounts so as to show (a) the disbursements made by it on behalf of the operating units under license-service contracts and (b) the disbursements assignable to its corporate activities as a holding company.

Today, with the exception of the contracts between the American Co. and the Cincinnati & Suburban Bell Telephone Co., and the Southern New England Telephone Co., the license-service contracts must be interpreted in the light of the fact that the American Co. is substantially the sole stockholder of each and every one of the associated companies. In view of this relation this contract should primarily be construed in rate proceedings as a definition of operating practices between departments of the same enterprise, rather than as a bona fide contract between independent parties dealing at arm's length. As a result the problem is one of properly dividing the costs incurred under the contract between the parties thereto, rather than being a question of the validity of the contract.

The license-service contract covers not only the furnishing of services by the American Co., but also division of revenues on business handled jointly by the long-lines department of the American Co. and the other operating companies of the Bell System. This aspect of the license contract is of far greater importance and significance than the service aspects of the contract. The service aspect of the contract involves license-contract fees of about \$15,000,000 a year. The division of interstate toll revenue involving approximately \$125,000,000 a year may have a decided effect on the disclosed operating profitability of a particular associated company and of the parent company.

The equitableness of present and past revenue-division practices has never been fully investigated by any regulatory body, although considerable data were developed during the course of the special investigation and State commissions have made studies on this subject. This subject will receive the Commission's further attention at the earliest practicable date.

Research.

The invention of the telephone itself and the many subsequent advances and improvements in the art of telephony have all been effected through processes of scientific research. During the early days following the invention this research was directed primarily to the development of apparatus and equipment necessary to make the invention practical and commercially useful. With the increase in the number of telephones and the distances over which telephone service was available, it was necessary to broaden the scope of research so as to increase basic knowledge of the nature of speech and the characteristics of voice transmission by all practical means, both wire and radio. This necessity ultimately led to the organization of the Bell Telephone Laboratories, Inc., in which the research activities of the Bell System are at present centered. It is jointly owned by the American Co. and Western Electric Co. Its activities are concerned with fundamental research and the development of devices and methods for use in the Bell System. The expenses of the laboratories are borne principally by American Telephone & Telegraph Co.

and Western Electric Co. The license-contract payments by the operating companies to the American Co. are more than sufficient to cover the portion of Laboratories' expenses charged against the American Co. In certain instances the activities of the Laboratories have resulted in developments useful in fields other than telephone communication and, in some of these instances, a portion of the cost of operating the Laboratories has been charged against those exploiting the device.

The expenditures by the Bell System for research are designed to insure the protection of its investment in the telephone-communications field by keeping abreast or ahead of developments in the art as well as in any potentially competitive fields, and as such they may be considered as properly payable by the stockholders from income rather than as operating expenses of the operating companies. From the standpoint of the telephone subscribers, the research activities of the Bell System have resulted in vastly improved service, and no criticism is intended of the policy adopted of making such expenditures in the interest of improved service.

The expenses incurred in the operation of Bell Telephone Laboratories, Inc., are borne by the American Telephone & Telegraph Co. and Western Electric Co. and indirectly by the associated operating companies through payments to the American Co. under the license-service contracts and purchase of equipment and apparatus. It may, therefore, be said that most of the cost of operating Bell Laboratories has been included in the expenditures of the operating telephone companies. Subscribers pay for telephone service and not for any of the component parts of the cost of rendering such service.⁴ Therefore, it cannot be said that the telephone subscribers have paid directly the cost of the research and development for telephone equipment. It must be recognized, of course, that nearly all revenues of the Bell System result from charges paid by telephone subscribers and, since such revenues have been sufficient to cover all operating costs and provide substantial profits, it is self-evident that the funds expended for research have come from payments by subscribers. The American Co. makes a segregation of the expenditures of Bell Laboratories as between what it terms telephone activities and nontelephonic activities. Thus, there is at least an attempt to segregate costs of research which bear directly upon telephone service from those which are not so directly related. The so-called telephone activities of the laboratories are the basic source from which many of the nontelephonic products result. The American Co. does not assign any portion of this initial research cost, attributed to telephone activities, to these nontelephonic byproducts and neither does it account for the royalties, or other profits, resulting from these byproducts in determining the revenue requirements from telephone service. This position is inconsistent. Either a portion of the fundamental research cost on telephone activities must be assigned to the nontelephonic byproducts or the royalties and other profits from byproducts must be equitably considered in determining telephone-service-revenue requirements.

⁴ *Board of Public Utility Commissioners et al. v. New York Telephone Co.*, 271 U. S. 23.

Patents.

The patent structure of the Bell System has grown from the 2 original Bell patents to a structure involving the ownership of more than 9,000 patents and rights under an even greater number of patents owned by others. From the beginning, control over Bell System patents has been centralized in the parent company of that system.

Prior to the expiration of the Bell patents the system had established the policy of acquiring all patents and patent rights related to communications deemed by it essential for the maintenance of its position in the communications field.

Prior to 1908 the Bell System vigorously prosecuted patent suits against telephone companies engaged in telephone-exchange service to the public. Later, these infringement suits were discontinued and the Western Electric Co. was permitted to sell telephone-exchange equipment and certain types of toll equipment to the public under such restrictions as the American Co. might impose from time to time.

The Bell System has at all times maintained a controlling patent position as to equipment and instrumentalities necessary for rendering efficient and economical long distance telephone service to the public. The system has also maintained patent control of public service in two-way radio telephony. In 1930 the system obtained control of the manufacture and sale of the teletypewriter; and in recent years has maintained control of devices considered necessary for the economical operation of broad-band-carrier systems over coaxial cables. The Bell System has maintained complete patent protection as to the types of automatic exchange equipment standardized for the telephone operating companies. The Bell System also obtained a strong patent position in sound motion pictures and a like patent position in sound amplifiers for public address and theater purposes.

By virtue of its policies and practices concerning the acquisition of patents and patent rights, the Bell System has continuously held from year to year a large number of unused patents. Patent suppression is commonly understood to mean ownership or control of patents and the intentional nonuse thereof. With the Bell System the non-use of patents has resulted in part from acquisitions to protect and maintain as near as possible a complete occupation of the telephone field, both as to services to the public and as to the manufacture of equipment therefor.

For the purpose of maintaining the exclusive right of manufacture and sale of patented equipment of the Bell telephone operating companies, Bell System patent rights are so divided under intercompany contracts and agreements that the operating companies obtain the right to use patented methods and equipment made available to them, while the manufacturing subsidiary of the Bell System (Western Electric Co.) obtains the exclusive right to manufacture and sell under said patents, thereby compelling the operating companies to purchase their equipment covered by Bell System patents from the Western Electric Co.

Whether patent rights held by the Bell System are acquired by purchase or result from research and development, the expense thereof is born either directly or indirectly by operating licensee companies. The manufacture and sale of patented equipment to the operating

companies of the Bell System, as provided for in the intercompany contracts and agreements respecting Bell System patents, places in the hands of the Western Electric Co. the exclusive right to manufacture and sell all equipment covered by Bell System patents to telephone operating companies that do substantially 90 percent of the telephone business in the United States. This system of manufacture and sale of equipment may be repugnant to the spirit of the antitrust laws of the United States.⁴ Such a condition also introduces a problem in the complete and proper regulation of the telephone industry, i. e., it eliminates any possibility of the Bell telephone operating companies securing equipment covered by Bell System patents on a competitive bidding basis, and thereby renders impossible the securing of significant comparative prices upon equipment included in the rate base underlying 90 percent of the telephone business in the United States.

The "cross-licensing agreements" in which the American Co. and the Western Electric Co. constitute the "telephone group" and the General Electric Co., the Radio Corporation of America and the Westinghouse Electric & Manufacturing Co. and other companies constitute the "radio group," represent the most extensive licensing of others under Bell System patents that has occurred in the history of that system. But these cross-licensing agreements do not represent a free exchange of licenses between the companies concerned, in that the chosen fields of the "telephone group" and the chosen fields of the radio group are kept intact, i. e., under the agreements the American Co. retains its exclusive rights under Bell System patents in two-way telephone services to the public (wire and radio), while the General Electric Co., the Radio Corporation of America, and the other companies of the radio group retain similar privileges in their respective fields.

The licensing of others under Bell System patents has been of a limited character. The policy of the American Co. has been to withhold licenses from others except in those fields that do not threaten the primary interests of the Bell System.

The ownership and control of patents by the American Co. contributes to its ability to control the exploitation of potentially competitive and emerging forms of communication, such as Teletype-writer Exchange Service and two-way public radio telephone service.

Engineering and Standardization.

The Bell System organization, which places complete control over research, engineering and development, manufacturing, installation, and operation of the national telephone plant in the American Co., affords this company the opportunity to determine the type of telephone equipment to be adopted by the associated companies, the date of installation, and operating practices to be followed. The equipment and methods used in the Bell System have been standardized to a remarkable extent with resulting economies in the manufacture of equipment and operation of telephone plant: flexibility in the interchange of equipment and trained personnel between different parts of the System; and a uniformly high quality of service.

⁴ Sec. 10, Clayton Act, U. S. C. A., title 15, ch. 1.

The magnitude of the Bell System and the integration of its operating, manufacturing, and engineering functions under centralized control, has placed great responsibility on American Co.'s management in its decisions affecting basically the quality and cost of telephone service. Experts testified that it was their opinion, deduced from records of the American Co., that developments capable of improving the service and decreasing its cost have been withheld for considerable periods; that the practice of limiting associated company purchases of apparatus and equipment to those furnished by the Western Electric Co. has prevented the use of improvements in the art developed outside the Bell System for considerable periods after such improvements were available; and that the American Co. has persisted in the installation of certain types of equipment which its studies indicated to be unduly expensive and uneconomical to operate. The American Co. studies with respect to panel type central office equipment, installed during the last 18 years at a cost of almost \$400,000,000, indicate that such installations failed to produce savings adequate to compensate for the claimed cost of money to the American Co. for financing the excess investment in panel type equipment above that required for alternative types. Furthermore, reports made by Western Electric to the American Co. show that on the basis of Western's costs, substantial losses have been sustained on the sale of panel type equipment to the associated companies. These losses have been more than compensated by high reported profits on sales of other types of equipment, and thereby have tended to increase the cost of telephone plant throughout the Bell System.

The Bell System organization, with the American Co. control over the profits from both telephone manufacturing and telephone operation, tends to limit the incentive to reduce the costs of telephone plant and telephone service so long as revenues are close to the maximum fair return on the value of the property devoted to the public use allowed by regulatory bodies and courts. Increased supervisory effort directed to operating efficiency, under the incentive of reduced income during the depression, together with other favorable factors, produced marked economies in the years following 1932 as compared with the period from 1920 to 1930.

There is a natural tendency incident to any program of standardization to retard the utilization of technical improvements. On the other hand, the lack of standardization operates to impair uniformity of service when such uniformity is an essential factor in the furnishing of satisfactory service. Such uniformity is an essential of a Nationwide telephone service. While there may be disadvantages in the application of a rigid program of standardization, which become particularly apparent when viewed retrospectively, it is apparent that in the long run the advantages of standardization in the communications field outweigh the disadvantages. The overall results of standardization by the American Co. are such as to justify a continuance of research and standardization.

Western Electric Co. Costs and Prices.

The Western Electric Co., as the manufacturing department of the Bell System, has had exclusive access to the huge market provided by the Bell System operating companies for telephone apparatus, equipment, and supplies. Approximately 90 percent of the total sales of all telephone manufacturers in the United States are made by West-

ern Electric Co. Independent telephone manufacturers are able to sell to Bell System operating companies only through the Western Electric Co. Western's prices for telephone apparatus and equipment have an appreciable influence on the cost of telephone service. In rate proceedings reproduction cost estimates based on Western's prices as of a specific date, or averaged over a period, are urged as evidence of the fair value of the particular property involved. If it be assumed that Western's over-all profit has been reasonable and that its manufacturing operations are reasonably efficient, it is still necessary that the cost accounting and pricing practices of Western reflect an equitable distribution of costs, plus a reasonable profit, as to each individual item or class of product. Western's costing methods do not provide such a basis. The composition of telephone plant as between different companies varies widely both as to the items included and the dates of installation. Telephone rates are not made on the basis of their over-all reasonableness as to the entire Bell System, but are rather made on the basis of individual exchanges, States, or other operating units.

Western's cost accounting methods are designed to include in the cost of each year's production all costs incurred in that year, whether or not the costs incurred are directly related to the production of the year. The methods followed in adjusting so-called "standard costs" to current costs involve the application of variation factors which may have no relation, or very little to the particular item for which the cost is being computed. Western Electric Co.'s income statement does not disclose separately the profit on its sales for any particular year and the profit or loss resulting from changes in the prices of raw materials and finished products in the merchandise inventory at the beginning and end of each year. Neither does Western Electric Co.'s accounting system undertake to determine the portion of each year's common costs or overheads properly assignable to that year's production in view of the relation of that year's use to the average or capacity use of the available facilities. These are results of the particular method used in reconciling standard and actual costs. Sound accounting practice demands that these elements be separately disclosed in the income statements. Further, there is apparently no attempt by Western to relate, on any rational basis, sales prices of individual items to the costs developed under its cost accounting methods.

Comparisons between Western Electric Co.'s and independent manufacturers' prices have been advanced by the associated Bell companies in justification of Western Electric Co. prices advocated by them in rate proceedings. The differences in manufacturing and marketing conditions between Western and the independent manufacturers are such as to make a comparison of their respective prices of little value in testing the reasonableness of Western's prices. Some of these differences are: (1) The size of the market supplied by Western as compared with that supplied by the independents; (2) the advance information available to Western as to the anticipated purchases by its customers, as compared with lack of such information to the independent manufacturers; (3) the cost of selling products of the independent companies as compared with the fact that no sales cost is incurred by Western; (4) the relative credit risks of the independent manufacturers and Western.

These comparisons, prepared by the American Co., are subject to additional criticisms, among which are the following: The samples chosen for comparison are not representative of the sales, either of Western or of independent companies; the prices assigned to independently manufactured products are above the prices at which the majority of such products are actually sold on the open market; larger volumes of independent sales are assumed in estimating savings than were ever actually made, without reflecting cost reductions ordinarily obtainable with increased volume of production.

Estimates of cost of reproduction of, or recorded investment in, telephone property for an individual State or exchange based on Western Electric costs and prices are entitled to little weight as evidence of the fair value of the telephone property involved as a result of the costing practices followed by Western referred to hereinabove.

There is at present no satisfactory method of determining reasonable prices of telephone apparatus and equipment of Bell System companies as factors in establishing property values. Prices of telephone plant purchased from Western are not the result of arms-length bargaining between unrestricted buyers and sellers. Western's cost accounting records do not provide dependable cost data on which to predicate elements of values. The Bell System's occupation of practically the entire telephone operating and manufacturing field precludes any control of Western Electric prices through competition and any measure of the reasonableness of prices by comparisons with other manufacturers. The importance of these conditions, from the standpoint of rate regulation, arises from the fact that a large part of the total investment in the Bell System, as well as a part of its operating expenses, is represented by the purchase price of telephone apparatus, equipment, and material. Consequently a large portion of the cost of telephone service depends directly upon unregulated prices which are subject to control by the American Co.

The evidence indicates that Western's prices bear no reasonable relation to the indicated cost of manufacture. In the case of natural monopolies where competition is absent, the interests of the consumer have been safeguarded to some extent by public regulation. Although the Western Electric Co. enjoys a monopolistic position at the present time, in the sale of equipment to the associated companies the existence of a group of independent telephone manufacturers which are engaged in producing types of apparatus and equipment similar to those manufactured by Western, suggests that some degree of competition might be introduced in the telephone manufacturing field for supplying the Bell System's needs.

Two methods of regulating or controlling prices of telephone apparatus and equipment appear to warrant consideration. First, the establishment of competition among telephone manufacturers on those items or classes of product which independent telephone manufacturers are able to produce for the use of Bell System companies; and second, regulation of the Western Electric Co., with provision for determination of its valid and reasonable manufacturing costs, including a fair profit, and their effect, in order that proper costs may be available for use in determining reasonable rates.

Considering first the possibilities inherent in competitive telephone manufacturing for the Bell System, it may be pointed out that many classes of telephone apparatus and equipment are produced in slightly

different forms by several telephone manufacturers. The public interest may require that the associated Bell operating companies be required to place orders for these classes of equipment with the lowest qualified bidder. Additional groups of telephone products might be thrown open to competition by permitting independent telephone manufacturers to manufacture for associated companies under Bell System patents. This result can be obtained by vesting in the associated Bell companies the right to manufacture or to have manufactured for them by others, all telephone apparatus and equipment which, under the existing license contract, they have the right to use. The fact that the associated companies have paid the bill, through license contract payments, and otherwise, for obtaining patents and patent rights now held by the American Co., the Bell Telephone Laboratories, and the Western Electric Co., might be justification for entitling the associated companies to have at least the right to manufacture and use and the right to have manufactured for their use, by others than Western, all articles covered by such patents. The legislation necessary to make competitive bidding with respect to such patented equipment possible would consist of means to require the associated companies to obtain the right to manufacture or to have manufactured for them under patents which the American Co., the Bell Telephone Laboratories, and the Western Electric Co. have developed or will develop as their paid agents. With respect to future patents, the associated companies would acquire, in addition to the right to use, not less than the right to manufacture or to have manufactured for them, under such patents.

Competition in the telephone manufacturing field might be desirable for several reasons: First, to remove control of prices from one company which occupies a dominant position in the telephone field. Second, because of the possibility of lower prices and higher efficiency in manufacture under the stimulus of competitive conditions. Even though the independent manufacturers were unable to enter bids for the entire Bell System requirements because of limited productive capacity, their manufacture of certain types of equipment to identical specifications would supply a yardstick or comparative basis for judging Western's manufacturing efficiency. Third, if Bell associated companies were in a position to buy approved independent products there would be available to the operating companies apparatus and equipment of the most suitable types to meet their individual requirements. Fourth, an incentive would be provided to independent manufacturers for the development of improvements in those parts of the telephone field not now available to them. Many of the most important advances in the development of telephone apparatus and equipment in the past have been accomplished by independent manufacturers, and the field for productive application of inventive genius should be made as broad as possible.

The effectiveness of competition among telephone manufacturers is dependent upon the adequacy and enforcement of laws to prevent abuses, such as price fixing and unfair practices. Independent companies at present would be able to compete with Western for only a part of its products, which might leave Western free to sell competitive equipment below cost and to recover the loss by increasing prices on noncompetitive equipment.

The second method for the control of prices of telephone apparatus and equipment is the regulation of the Western Electric Co. As the manufacturing and supply department of the Bell System, the Western Electric Co. occupies a monopolistic position comparable to that of the American Co. and is, in effect, a department of a public utility. Practically all of Western's activities are devoted to the service of the public through the medium of the Bell operating companies. Regulation of Western would involve, among other things, the introduction of a modern and efficient cost-accounting system whereby the cost of manufacture of each type or class of product could be determined with reasonable accuracy.

The Western Electric Co. now buys a small part of its requirements for Bell System business from independent manufacturers, the largest of such orders being that placed with the Automatic Electric Co. for step-by-step automatic equipment. The major independent telephone manufacturers, during the years 1926 to 1934, inclusive, made approximately 10 percent of the total sales of telephone apparatus and equipment, of which 40 percent, or 4 percent of the total, were made to Western and the remainder to independent telephone companies. Under regulatory control the Western Electric Co. might be required to purchase from outside manufacturers any items or classes of equipment or material which it could so purchase at prices lower than its own manufacturing cost. Under this plan the manufacturing department of the Western Electric Co. would be placed in competition with independent manufacturers for a part of the associated companies' business.

The chief disadvantage of control of prices through regulation of Western lies in the absence of incentive for operating efficiency. The requirement that Western, as the supply department and purchasing agent of the Bell System, place its own manufacturing department in competition with independent manufacturers presents a difficult problem of regulation and administration.

Depreciation.

The depreciation accounting practices of the Bell Telephone System, from its inception to 1913, were variable and erratic. Since 1913, these practices have followed the rules laid down by the Interstate Commerce Commission, and later by the Federal Communications Commission, as interpreted by the American Co. This subject is highly controversial, and the principal difficulties relate not to the mechanics of the bookkeeping, but to the determination of the amount to be included annually in operating expenses, and to the relationship of the reserves as accumulated to the accrued depreciation alleged by the companies to exist in the property as of a date certain. The determination of the amount to be included annually as depreciation expense under the accounting rules involves a determination of the service life and salvage value of the units of property considered to be depreciable. In a proceeding involving the level of telephone rates the accrued depreciation to be deducted in arriving at the rate base likewise involves a determination of the remaining life and salvage value of the property used in furnishing telephone service. If equitable treatment is to be accorded the telephone subscribers, these two estimates must be consistent.

The Bell System estimates of the amount necessary annually to provide for depreciation accruing in the property are designed to cover, among other things, the loss in value arising from inadequacy, obsolescence and other causes of retirement anticipated to occur in the future. This specific provision for these risks is intimately related to other provisions for risk, which are ordinarily included in the net return. To the extent that insurance against risk may be covered in depreciation charges included in operating expenses, it should not be duplicated in determining the fair return necessary to avoid confiscation.

From an accounting standpoint the Bell System practices, whereby no consideration is given to the amount in the reserve when an estimate of service life or salvage value of property is changed, are bound to result in an overstatement or an understatement of the reserve with respect to any item as to which the estimate of service life or salvage value is changed from time to time. The average life of all telephone plant probably is increasing; therefore most of the adjustments will reflect a longer service life. This condition, coupled with the Bell System practices referred to above, has a tendency to result in overstating the operating expenses during the life of the units involved and in excess accruals in the depreciation reserves.

The consolidated depreciation reserve of the Bell System is approximately 30 percent of the book cost of depreciable telephone plant. The system has usually contended in rate cases that its property is depreciated, for rate base purposes, only to the extent of something less than 10 percent. The difference between the amounts obtained by the application of these percentages represents property values which do not exist if its estimates of annual charges for depreciation have been correct; or, if its estimates of annual depreciation have been incorrect, this difference represents an understatement of its profits in the years when this excess was alleged to have accrued. In the latter case, the difference referred to is, of course, nothing more nor less than a concealed profit. It is doubtful whether a more important service could be rendered to the development of proper regulatory processes than that of once-and-for-all securing wholly consistent treatment by Bell System operating companies of the factor of depreciation in both operating expense and rate base aspects.

This Commission is charged with the duty of fixing rates for depreciation. The matter of carrying out the provisions of section 220 (b) of the Communications Act of 1934, as amended, has had continuous attention from this Commission since its organization. As a practical matter, it would probably be inadvisable for this Commission to attempt to fix specific rates for all classes of depreciable property for all telephone companies, but it is certain that the Commission should prescribe rules, processes, and procedures which will result in the determination of depreciation charges that are proper and reasonable and will coordinate them with other elements of cost of telephone service to which the depreciation charges are intimately related. This will require careful policing by this Commission to insure compliance with such rules.

Toll Activities—Domestic and International.

From the very beginning, as previously pointed out, the American Co. has conceived of the creation of a Nation-wide telephone service. It largely reserves to itself the providing of the interstate interexchange

network necessary to make this a reality. This national network had been built up gradually from 1880 to 1915, when coast-to-coast service was first rendered, and has been further expanded and improved since that time. This national network was made economically feasible by reason of several outstanding developments; these being, in succession: (1) The transposition of metallic circuits; (2) the loading of circuits; (3) the vacuum-tube repeater and associated circuits; and (4) carrier-current operation. In 1927 this national system was expanded into a transoceanic system by the introduction of radio-telephony to the Continent of Europe and subsequently to most of the world.

The American Co. has consistently retained to itself the use of devices, as they were developed, necessary for the economical operation of two-way long-distance telephone circuits. This consistent policy has been a most important factor in the development of the dominant position of the Bell System today, since even at this date there is no competitor in a position to duplicate the Bell System long-distance facilities and service, regardless of the resources available, in the absence of the right to use the devices owned or controlled by the American Co. Incidental to the basic message toll telephone service, the American Co. has developed other telephone, telegraph, and teletypewriter services, which contribute substantially to the financial success of the integrated enterprise.

Telephone communications service originates and terminates at the subscribers' stations. Any interstate telephone communication, therefore, involves the use of the subscriber station, the exchange facilities, and the toll network. The determination of the reasonableness of toll and exchange rates involves the allocation of property, revenues, and expenses among the several services, interstate toll, intrastate toll, and exchange. The basis upon which this allocation may be made is largely determinative of the apparent profitability of any of the several classes of service or of the profits of the individual companies that may participate in the joint operation incident to furnishing the service. The problem of fixing equitable rates for any particular class of service and for any particular community is extremely complicated, and no simplified method of effecting the allocations necessary has been developed. The problem is receiving the attention of this Commission with a view to developing a simplified, yet equitable, basis for the necessary allocations.

The division of ownership of the national telephone facilities among the long lines department of the American Co, the associated Bell companies, and the independent connecting companies, together with the use of through rates for service furnished jointly by two or more of these properties brings with it problems relating to the equitable division of the revenues earned by this joint service. The successful maintenance of Nation-wide telephone service makes it mandatory that every participant in this joint service receive an equitable portion of the through rates. There is evidence to indicate that present division practices are inequitable as to certain of the participating carriers. In general, the divisions of joint revenues presently prevailing are the result of terms, conditions, and practices prescribed by the American Co. and, of necessity, accepted by the associated companies and connecting carriers.

A simple and equitable method of allocating property, revenues, and expenses common to two or more of the services rendered by the Bell System (intrastate toll, interstate toll, and exchange) must be developed in order to eliminate costly analyses in connection with individual rate proceedings and to reflect more accurately the profits of the various classes of service in the current operating reports. This matter has received and is receiving the attention of this Commission.

Radio Broadcasting.

The activities of Bell System companies in the domestic radio-broadcasting field are today limited to the furnishing of the facilities and services necessary for the transmission of broadcast programs over wire lines. Prior to 1926 the Bell System did engage in the construction and operation of broadcast stations. Apparently it was the initial intention of the Bell System through its patents to control radiobroadcasting, as well as the manufacture and sale of broadcast transmitters. It later found it could not maintain this position under the 1920 cross-license agreement, and in 1926 it withdrew from the operation of broadcast stations and confined its activities principally to the furnishing of wire facilities for the transmission of broadcast programs.

At present the Bell System tariffs on file with the Commission prohibit the interconnection of interexchange facilities of other wire carriers with its interexchange-program-transmission network, except where Bell System facilities are not available. This has given rise to certain claims of unjust discrimination in instances where wire facilities of other carriers have been offered to broadcast stations on a basis of charges apparently much lower than those made by the Bell System. These complaints involve several problems which must be handled in the light of the facts appearing in each particular case.

Noncommunications Activities.

Many of the devices covered by patents owned by the Bell System have application outside of the wire- or radio-communication field. The noncommunication activities have in general been carried on, in recent years, through Electrical Research Products, Inc., a wholly owned subsidiary of Western Electric Co. organized for this purpose.

The Bell System companies have, in general, endeavored to limit their activities in the noncommunication field to that of licensor, under patents having application outside the communication field. The sound motion-picture activities are the exception to this rule, although it appears that the Bell System resumed its status of licensor as soon as possible, or as soon as the sound motion-picture industry was more or less firmly established. It might be said in this connection that circumstances forced the Bell System into the sound motion-picture field, due to the failure of outside promoters to carry on in accordance with their commitments.

It is the duty of the American Co. to the telephone-using public to exploit fully and completely all the profit opportunities arising from patents or patent rights acquired in the conduct of the telephone business. If the cost of fundamental research which results in the incidental development of devices useful in the noncommunications field is all included in the cost of furnishing telephone service, the profits derived from the exploitation of such devices must be reflected in determining the revenue required from telephone service.

Financing of the Bell System.

The capital funds required to keep pace with the increasing demand for telephone service were provided principally through the sale of equity securities by the parent company. This method of financing is reflected in the present capital structure of the Bell System, which consists of about 73-percent capital-stock equity and 27-percent long-term debt. The financing of the entire Bell System is centralized in the American Co. The major part of the financial requirements of the associated companies is met in the first instance by advances to them from the American Co., most of which are subsequently converted into capital stock of those companies. After the consolidation of the American Bell Co. with the American Co., as of December 30, 1899, to the end of 1935, the American Co. issued approximately \$1,815,000,000 par value of its capital stock, of which \$1,135,000,000 was sold at par, under subscription rights issued to stockholders, at times when the market price of the stock usually was considerably above par. The remainder was disposed of at a premium of \$281,000,000, of which \$216,000,000 represents premium realized on capital stock issued in conversion of convertible bonds.

Prior to 1906 substantially all the long-term-debt issues of the American Co. and its predecessor, American Bell, were sold through competitive bidding. Beginning with 1906, such security issues were sold, without obtaining competitive bids, principally to syndicates of bankers headed by J. P. Morgan & Co., the more recent issues having been sold to syndicates headed by Morgan, Stanley & Co. Some of the financial requirements of the associated companies were met through the incurrence of funded debt.

Generally, these bonds also were sold to the same syndicates with the advice and under the direction of the American Co. It is not possible from the available evidence, or because of the lack of it, to conclude whether the American Co. and the associated companies have or have not obtained the best prices and the lowest bankers' commissions that the investment market could offer at the time bonds were issued. It would seem fair that, if the cost of bond money is to be a factor in determining interest during construction work in progress, and evidence in establishing a fair rate of return, the investment bankers should be given an opportunity to make competitive bids, and the investment market should be allowed to express itself freely as to the rates of return at which it will supply the telephone business with capital.

The capital structure of the Bell System, with its relatively small proportion of long-term debt and a preponderance of equity financing, reflects a generally conservative financial policy over the years, particularly in the case of the American Telephone & Telegraph Co. itself. A considerable portion of the investment in system-operating properties has, moreover, been accomplished through the use of funds derived from operations, equivalent to depreciation-reserve provisions, with resultant benefits of large magnitude to equity holders. The protection afforded to the system as a result of liberal provisions for research has also served to strengthen its economic position, from both patent and general business viewpoints.

These factors, together with the unusual stability and magnitude of earnings which have been demonstrated over a long period of

years to adhere in this enterprise, are elements of high significance, particularly in connection with the selection of a proper "rate of return" to be allowed the system's operating constituents under public regulation.

It has frequently been asserted by Bell System officials that the policy of paying an annual dividend aggregating \$9 on each share of American Telephone & Telegraph Co. common stock is a policy dictated by economic necessity, in the light of the system's large, recurrent, and—until the depression—continuous need for additional financing from sources outside the system itself. Whether this policy has in fact thus been required by economic necessity or is today so required is apparently a matter of judgment upon which opinions may reasonably differ and as to which "proof," in the ordinary sense of that term, is difficult if not impossible to adduce. In any event, the use of this \$9-dividend policy of the parent corporation as a basis for operating company claims in respect to "cost of money" in various phases of rate proceedings is without adequate foundation. And it obviously cannot be said that the continuance of such a dividend policy by the parent corporation of this system possesses significance in respect to the "rate of return" which the constituent operating companies are to be allowed to earn from the consumers of their public-utility services.

The Bell System Pension Plan.

In 1913 the Bell System instituted a pension plan designed to take care of the superannuation problem as it affected the Bell System. The plan provided for the payment of pensions to employees who fulfilled the requirements of the plan. From 1913 to 1926, inclusive, the plan operated on the pay-as-you-go basis, whereby actual disbursements for pensions to employees on the pension roll were charged to expense for the year in which the disbursements were made; however, during that period, a substantial employees' benefit reserve was set up on the books, principally through appropriations from surplus. No specific advance accruals to take care of pensions for employees to be subsequently retired were made during the period prior to 1927. In 1927 the companies adopted an accrual plan of providing the amounts necessary eventually to pay the pensions called for under its plan. The method adopted was called the 15-year-service accrual basis, whereby accruals were recognized in the accounts only for employees with more than 15 years of service. In 1928 this was further modified to the full-service accrual basis, whereby accruals commenced with the date of employment of each employee. Neither in 1927 nor in 1928 was any step taken to provide for the elimination of or for the arresting of the growth of the unfunded actuarial liability which then existed. Any accrual and funding basis of providing for pensions results in a lower total charge to operating expenses for pensions actually paid than the pay-as-you-go basis.

Subsequent to 1937 the pension plan of the Bell System has been modified substantially to provide for the elimination of certain undesirable features to which attention was directed by the special-investigation staff. Instructions to the trustee have recently been modified to provide that the pension fund held by the trustee shall eventually be in the form of securities eligible for investment by life-insurance companies in New York.

Recent amendments to the plan have served to clarify and correct certain features criticized by the investigation staff. The reservations in the plan by which the company retains the right to discontinue it were unaltered by these amendments, but on the other hand the amendments provided specifically for the distribution of any amount in the pension fund as of the date of discontinuance among those already on the pension roll, those eligible for the pension, and those potentially eligible, in substantial proportion to their matured and maturing rights insofar as the residual fund will permit.

There is pending before the Commission a proceeding in which certain Bell System companies seek to increase the annual charges to operating expenses, allegedly representing normal accruals on a full-service basis, by an amount equal to 4 percent of their unfunded actuarial liability under the plan. Further discussion of this question is withheld, pending disposition of the case now before the Commission. Pensions paid to executives under the Bell System plan are more than generous. This is a matter to be considered by each regulatory commission in a proceeding involving the reasonableness of operating expenses of any Bell System company which include estimates of accruals to provide for these pensions.

Public Relations.

A history of the Bell System activities in the field of public relations indicates that the system has pursued an active policy of cultivating public good will at considerable expense. There is evidence to indicate that improper influence has been brought to bear upon legislative and regulatory bodies charged with the duty of fixing rates for Bell System companies. This practice is clearly against public interest; is condemned; and should not be countenanced by any regulatory body. The Bell System has subsidized various publications. The propriety of including in operating expenses of any Bell System company, for rate-making purposes, amounts designed to promote good will is a question for the regulatory body which may be faced with this problem in a specific rate proceeding.

Profits of the Bell System.

The profitableness of the Bell Telephone System is reflected in the continuous dividends paid by the parent companies since 1880, averaging over 15 percent annually by American Bell Telephone Co. to 1900, and ranging from 7½ to 9 percent annually by the American Co. from 1900 to the present time. The recorded earnings of the parent companies were sufficient to meet the requirements for the payment of these liberal dividends and to permit the companies to build up large surpluses, which at the end of 1931 aggregated almost \$400,000,000. At the end of 1938, the American Co.'s undistributed earnings were approximately \$219,000,000, the decrease since 1931 resulting principally from dividend payments of some \$138,000,000 in excess of the earnings for the last 7 years, and substantial surplus charges representing premiums paid in connection with bond-refunding transactions. In addition, the stockholders received valuable subscription rights which were in the nature of special distributions of income to them. The market value of the stock-subscription rights issued by the American Co. to its stockholders during the years 1900 to 1930, inclusive, was approximately \$600,000,000.

At the present time, annual operating revenues of the Bell Telephone System exceed \$1,000,000,000, substantially all of which have their source in the rates paid for service by the telephone users. During the 23 years 1913 to 1935, inclusive, net telephone earnings of the Bell System, as reflected in consolidated operating statements of the American Co. and the associated telephone companies, averaged over 7 percent annually on the average net book cost of telephone plant and equipment, in spite of the fact that during the depression years 1931-35, inclusive, such average annual earnings were only 5.38 percent. Since 1935 the ratio of average annual net telephone earnings to the average net book cost of telephone plant and equipment has been slightly below the annual average for the preceding 23 years.

The investment of the American Co. and its predecessor, American Bell Telephone Co., in Western Electric Co. has also been very profitable, as indicated by the fact that the cash dividends received from Western from the date of its organization to the end of 1936 have been equivalent to an average annual return of approximately 12 percent on the actual cash invested by them in the capital stock of that company. The cash dividends received from Western to the end of 1930 were equivalent to an average annual return of approximately 21 percent to the parent companies of the Bell System on their cash investment in the capital stock of that company.

Purchases made by the Bell System companies from the Western Electric Co. constitute a substantial part of their total investment in telephone plant, and the fixed carrying charges on this plant also constitute a considerable portion of the total cost of rendering telephone service. A part of the Bell System telephone-plant investment represents profits of Western that were returned principally to the American Co. in dividends or were added to the value of its equity in Western. Most of the present Bell System telephone plant was constructed in the years 1916 to 1930, inclusive. During this period the American Co.'s equity in the net income reported by Western averaged over 21 percent annually of the former's cash investment in the capital stock of that company, and the dividends received from Western during this period represented an average return of 23 percent annually on such cash investment. These profit rates appear to be excessive, in view of Western's position as an integral part of the Bell System and its assured market comprising about 90 percent of the Nation's entire requirements for telephone apparatus and equipment.

The conclusion is inescapable that the Bell System has been an exceptionally profitable enterprise since its inception 60 years ago. The stockholders of the parent companies of the Bell System have participated in this very profitable enterprise as equity owners.

Except for the decrease in the rate of earnings in recent years, the earning record of the American Co. for a long number of years appears to have been unusually high for a system engaged in rendering public service. A repetition of the performance characteristic of the period prior to the depression may be expected when the system's plant is more fully used through increase in traffic and in the number of telephone stations in use, unless rates are reduced either voluntarily or through action by regulatory authorities.

CHAPTER III

CONCLUSIONS AND RECOMMENDATIONS

Although the telephone business of the United States is today, and at all times since the invention of the telephone has been, almost exclusively private in ownership, it has been recognized from its inception to be a business peculiarly affected with a public interest. The necessary attributes of so-called natural monopoly which ordinarily attend efficient and economical telephone service; the intimate relation of such service to social well-being, both local and national; the nature of telephone service as a fundamental necessity of modern living; and the public interest in the progressive development of increasingly effective and economical communication facilities are all factors which disclose the underlying character of this business as an essential public utility—entitled in the interest of its patrons to reasonable protection from wasteful competition, and entitled to make reasonable charges for its service, but subject to public scrutiny, regulation, and control, to the end that adequate service, equal treatment, and reasonable and nondiscriminatory rates may be assured to all who may apply. The importance of the telephone industry and the magnitude of telephone operations demand actual and not nominal regulation. A coherent and constructive program of regulation must be developed and placed in operation in order to protect the interests of the public. This imposes upon the public authorities a responsibility of prime importance.

The concentration of by far the greater proportion of telephone assets and facilities in this country in the hands of the Bell Telephone System, and the high degree of management unification and control attained by that corporate aggregate, has rendered it necessary for both the users of telephone service and the public agencies created to regulate such service to concern themselves largely (in the interstate field almost wholly) with that unified and dominating agency. The efforts of individual States to ascertain many of the basic facts necessary for effective telephone rate and service regulation within their borders have at all times been hampered and have frequently been rendered largely nugatory by reason of their necessarily limited jurisdiction, many essential elements of Bell System organization and practice being beyond their control. It is apparent that only a Federal administrative agency, equipped with broad regulatory and investigatory powers over both the parent and the subsidiary units of the Nation-wide Bell System, may hope effectively to develop and keep currently available the extensive factual background upon which any adequate and informed regulatory process must rest in respect to the American telephone industry.

Although the regulation of exchange and intrastate toll operations was commenced by State and local authorities soon after the inven-

tion of the telephone, and although such regulation has developed and expanded over the years until a relatively large body of law and administrative precedent today surrounds these operations, in the sphere of interstate telephone service no attempt to initiate public regulatory activity was made prior to the passage in 1910 of the Mann-Elkins Act (36 Stats. 544), under which certain limited jurisdiction was vested in the Interstate Commerce Commission. That body in 1913 prescribed a uniform system of accounts to be kept by telephone companies, but whether by reason of lack of sufficient funds, or of an effective statutory mandate, the Interstate Commerce Commission did not find it practicable to engage in positive rate and service regulation, with the result that in 1934 the special congressional committee which investigated communication problems reported that "at the present time there is little, if any, Federal regulation of the rates, practices, and charges of the several branches of the communications industry"; and later in the same report declared:

The American people are entitled to know if they are being overcharged for this service, though they may be satisfied with the quality of the service * * *. The importance of the industry and the magnitude of its operations call for actual and not nominal regulation. Telephone business is a monopoly—it is supposed to be regulated. Thus far regulation, particularly by the Federal Government, has been nominal largely because Congress has not made appropriations sufficient to enable the Interstate Commerce Commission to give effect to existing statutes.¹

The filing of the report just quoted was shortly followed by the enactment of the Communications Act of 1934, under which, among other things, the telephone regulatory powers of the Interstate Commerce Commission were transferred to the new Federal Communications Commission and were amplified to vest in this administrative agency much more comprehensive authority over interstate telephone rates and service. On March 15, 1935, by Public Resolution No. 8 of the Seventy-fourth Congress (49 Stat. 43), the Federal Communications Commission was authorized and directed to "investigate and report on the American Telephone & Telegraph Co. and all other companies engaged directly or indirectly in telephone communication in interstate commerce, including all companies related to any of these companies through a holding company structure or otherwise * * * in aid of legislation by the Congress and for the use of governmental agencies, including State regulatory commissions, for the information of the general public, as an aid in providing more effective rate regulation, and for other purposes in the public interest."

The mandate contained in this congressional resolution has now been complied with. An extensive investigation and survey of the telephone business of the United States and particularly of the so-called Bell Telephone System, has been completed by this Commission, and the foregoing report outlines the more noteworthy facts gathered during that investigation, together with certain conclusions which have been drawn from those facts. It is believed that the data contained in this report, as summarized in these conclusions, presents for the first time for the use of Congress and American people a fully rounded and inclusive picture of this history, development, magnitude, present status, and operating practices of the telephone

¹ Preliminary Report on Communication Companies (H. Rept. 1273, 73d Cong., 2d sess. 1934), submitted on April 18, 1934, pursuant to H. Res. 59, 72d Cong., 1st sess. (1934), and H. J. Res. 572, 72d Cong. (1933), the so-called Splawn Report.

industry in this country, with particular reference to the unified group of corporate agencies which dominate that industry. Moreover, the cost to the public of the telephone investigation, totaling \$1,500,000, may fairly be compared to concrete monetary savings to the public in telephone rates now aggregating considerably in excess of \$30,000,000, directly resulting from the efforts of this Commission in this investigation—not to mention additional rate adjustments of equal volume which have been at least largely caused by the pendency of the investigation, and also not to mention the fund of experience and the background of basic factual data which has resulted from the carrying out by this Commission of the mandate of Congress under Public Resolution No. 8.

The telephone industry of the United States renders an essential public service which, by reason of its very nature, is not only subject to but definitely requires regulation by public authority. It is today a \$6,000,000,000 industry. The development of the Bell Telephone System has resulted in the concentration in the hands of a single corporate aggregate of by far the greater portion of the telephone service, equipment, and facilities of the Nation, a concentration which in the interstate telephone field is well-nigh absolute. While this high integration of the entities to be regulated simplifies to a marked degree the problem of regulation in the field, both local and national, it likewise imposes upon the regulatory authorities an unusual responsibility in one of the most difficult and complex fields of governmental effort.

Indeed, the report here offered to the Congress discloses that the public authorities, particularly those which have to do with interstate telephone operations, are faced with a problem of no small moment even in respect to the creation and development of underlying regulatory machinery. However, the investigation conducted under the mandate of Public Resolution No. 8 has resulted in the development and analysis of a large and important fund of data, and in the production of a background of fundamental experience upon which it is believed that adequate future regulation of interstate telephone operations may successfully be founded, and in connection with which positive cooperation may be afforded to the various State regulatory authorities. The possibility of developing sound regulatory processes in this general field may fairly be said to have been demonstrated.

It is fundamental that the administrative process must be so developed as to fill the need of the occasion for expertness. In the highly technical field of telephone rate and service regulation this fact is of peculiar import. Only if it be fortified with an adequate staff, continuously employed solely in the exploration of these problems, can any agency hope to develop the sound, positive, and effective regulatory methods which are requisite. Indeed, it has become obvious that the experience, expertness, and continuity of management attained by the American telephone industry must be matched to the highest practicable degree by equivalent experience, expertness, and continuity of supervision on the part of the representatives of the public, if the regulatory process is to become even measurably successful in this technical and highly specialized field of interstate public administration. This means that a staff of adequately trained experts must be developed with specific responsibility in connection with

wire-communication problems, consistent with the declared purposes of the Communications Act of 1934:

To make available, so far as possible, to all the people of the United States a rapid, efficient, Nation-wide, and world-wide wire * * * communication service with adequate facilities at reasonable charges * * *.

The earning power disclosed by the major elements of the American telephone industry, even in the teeth of the country's most severe economic depression, discloses that the saturation point is as yet far from reached in this sphere of communication activity. Maintenance and improvement of the quality of service which has already been attained in respect to most phases of this service is important, and the public is entitled to know whether repeated company claims that such service is being rendered at the lowest possible rates consistent with the maintenance of adequate service are in fact justified. The accomplishment of these ends will require a program of constant effort and a policy of persistent exploration in a rapidly changing field. The fundamental problem consists in the development of adequate machinery for the continuous provisions, effective analysis, and prompt publication of the underlying facts. Experience over the years demonstrates that under existing conditions in the telephone industry this result cannot be brought about in the most effective manner except through a Federal administrative agency armed with broad powers of investigation, equipped with a staff of high caliber, training, and capacity, and prepared not only to carry forward positive regulatory effort in the interstate sphere, but also to afford the States with access to those facts which they today frequently find themselves unable satisfactorily to obtain. So long as the Bell System continues to be organized upon its present basis the individual States must continue to look to the Federal regulatory agency to afford them with many elements of the essential factual background of telephone regulation. Not only, therefore, is an adequately staffed and properly organized Federal regulatory agency important in itself, but there is need for such a body to act in some measure as a cooperating agency with the States. Only through such a program may the public authorities of both the Nation and the States be enabled to cope with this complex situation, and only thus may assurance be had that the public moneys which have been expended on the telephone investigation may find full fruition.

Numerous specific issues which must be faced have been discussed at length in the foregoing report. Certain of these are common to all public utility regulation, others are peculiar to the telephone business, while still others stem from the particular organization and operating practices of the Bell Telephone System. Among the more important of the issues thus to be faced in connection with active and positive telephone regulation may be mentioned the problem of developing an effective method of determining the reasonableness of the costs and prices of telephone apparatus, equipment, and supplies whenever the manufacturer or supplier and the operating company are under common control or ownership; the question of the proper separation or allocation of property, expense, and revenue as between different types and classes of telephone service and of the simplification of existing allocation procedures; the problem of determining just and equitable divisions as between the various entities which render the component parts of certain phases of this service;

the problem of effectively meeting the issue of Bell System license-contract charges as well as other intercompany transactions and agreements; and the problem of developing processes and machinery of an accounting nature which will enable the public authorities to keep at all times fully abreast of progress in this business, and to determine continuously and with accuracy the reasonableness of particular rates and charges.

Examination of the Communications Act of 1934, in the light of the issues thus presented, as well as of the other problems discussed in the foregoing report, discloses that a general frame work of statutory authority has been provided for the regulatory efforts of this Commission in the telephone field. This does not mean that additional or amendatory legislation will not be required, in order, as the need arises, to expand and clarify the authority vested in this body.

It is at this time deemed necessary and desirable to recommend the following amendments to the act in question:

First, specifically to authorize this Commission to prescribe basic cost-accounting methods to be followed by manufacturing companies under contract with operating telephone companies for the general supplying of materials or equipment, and by manufacturing companies subsidiary to or affiliated with operating telephone companies through corporate structure.

Second, to require approval by this Commission for, and as a condition precedent to, the issuance or refunding of any securities of corporations which offer telephone service subject to this Commission's jurisdiction.

Third, amend section 201 (a) of the Communications Act to clarify this Commission's jurisdiction over the division of joint interstate rates per se. As the section stands it might be contended that the jurisdiction of the Commission is limited in this connection to those instances wherein a physical connection has been ordered by the Commission.

Fourth, amend section 202 (b) so as to make it clear by specific language rather than by implication that practices, classifications, regulations, and facilities, as well as services and charges, in connection with the use of wires in chain broadcasting shall be subject to regulation by this Commission and so that this section of the act will correspond to the preceding half of the section, 202 (a).

Fifth, amend section 214 (a) of the act to prohibit the abandonment of any interstate line operated by any carrier subject to the act without authorization from this Commission.

Sixth, amend section 221 (a) so as to make the application for consolidations of telephone companies subject to the act mandatory.

Seventh, amend section 221 (a) so as to require approval by the Commission of all acquisitions by one company of the stock or voting stock of another company for purposes of control.

Eighth, in the event of the refusal of any common-carrier utility engaged in interstate communications to license others upon reasonable terms under any patents obtained in connection with communication service to the general public as a common-carrier utility, the Commission should be empowered, upon the application of parties so refused, to order the issuance of such license; provided that the granting thereof will not be detrimental to the communication service rendered by the utility holding such patents and not detrimental to technical progress.

Ninth, it is suggested that the Congress give consideration to the question of assessing the cost of regulation against the industry to be regulated.

The instituting of an active program of telephone regulation need not await the enactment of further laws by the Congress. From time to time we shall be impelled to request of the Congress additional legislation either declaratory in character of the intent of Congress or expressly granting additional regulatory powers to this Commission. The telephone investigation, however, has provided the Commission with basic data to serve as the foundation for the inauguration and development of continuous and efficient administrative processes in the highly technical field of telephone regulation. It must be noted

that the development of effective regulatory process consistent with the magnitude of this general problem and with the statutory responsibilities already vested in this Commission will require the provision of funds sufficient to enable the Commission to meet the exigencies of the situation and the need for expertness of legal, accounting, engineering, statistical, and certain related branches of regulatory technique. The exploratory efforts put forth during the course of the telephone investigation afford a basis of experience upon which it is possible with assurance to predicate estimates of the amounts required to accomplish these purposes and certain concrete suggestions in this direction will be made the subject of a separate communication from this Commission to the Congress.

Finally, the telephone investigation conducted by the Federal Communications Commission in response to the mandate expressed in Public Resolution No. 8 has served effectively to disclose the nature and magnitude of the telephone industry and of basic telephone-regulatory problems in this country. Through the investigation this Commission has been enabled to bring together for the first time an impressive volume of data in respect to such problems—data both fundamental in import and of permanent value, and which, but for this investigation, would have had to be provided by some other means or agency before effective interstate telephone regulation could be inaugurated. During the course of the investigation, and as a result of the direct efforts of the investigatory staff, telephone-rate reductions now aggregating in excess of \$30,000,000 were effected in the interest and for the benefit of the American telephone-using public. In addition, the extent of the problem of future effective interstate telephone rate and service regulation has been thoroughly explored, and the possibilities of cooperation with State regulatory authorities have been canvassed. With the minor exceptions already noted, this Commission is deemed now to be possessed of inclusive statutory authority and, as a direct result of the telephone investigation, to be provided with basic data sufficient to serve as a firm foundation for the inauguration and development of continuous and efficient administrative processes in this highly technical field of governmental effort.

The actual development of such administration is conditioned upon the provision of funds sufficient to make possible the placing in effect by this Commission of such a program, in continuation of efforts begun during the progress of the telephone investigation and in aid of the interest and requirements of the Nation's telephone users.

Respectfully submitted.

FRANK R. MCNINCH, *Chairman*.
NORMAN S. CASE,
T. A. M. CRAVEN,
GEORGE HENRY PAYNE,
FREDERICK I. THOMPSON,
THAD H. BROWN,
PAUL A. WALKER.

APPENDIX

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APPENDIX 1

[PUBLIC RESOLUTION—No. 8—74TH CONGRESS]

(S. J. Res. 46)

JOINT RESOLUTION Authorizing and directing the Federal Communications Commission to investigate and report on the American Telephone and Telegraph Company and on all other companies engaged directly or indirectly in telephone communication in interstate commerce, including all companies related to any of these companies through a holding company structure, or otherwise

Resolved by the Senate and House of Representatives of the United States of America in Congress assembled, That it is necessary, in aid of legislation by the Congress and for the use of governmental agencies, including State regulatory commissions, for the information of the general public, as an aid in providing more effective rate regulation, and for other purposes in the public interest, that accurate and comprehensive information be procured and compiled regarding the American Telephone and Telegraph Company and other telephone companies.

SEC. 2. The Federal Communications Commission is hereby authorized and directed to investigate and report to the Congress on the following matters with respect to the American Telephone and Telegraph Company and all other companies engaged directly or indirectly in telephone communication in interstate commerce, including all of their subsidiary, affiliated, associated, and holding companies, and any other companies in which any of them have any direct or indirect financial interest, or which have any such interest in them, or in which any of their officers or directors hold any office or exert any control or whose officers or directors hold any office or exert any control in them—

(a) The corporate and financial history, and the capital structure and the relationship of such company and of its subsidiary, affiliated, associated, and holding companies, including the determination of whether or not such structure may enable them to evade State or Federal regulation or taxation, or to conceal, pyramid, or absorb profits, or to do any other act contrary to the public interest.

(b) The extent and character of intercompany service contracts and all transactions between the telephone companies and their subsidiaries, affiliated, associated, or holding companies, and particularly between the American Telephone and Telegraph Company and the Western Electric Company and other manufacturers of electrical communication equipment; the methods of publishing telephone directories and placing and charging for advertising therein; the cost of and sale prices of telephone equipment, material, or devices to telephone operating companies or users; the profits upon such sales and the effect of such sales upon the rates or upon the rate base of

operating companies when used as a basis for telephone charges in the various States or in interstate commerce; and the probable savings to telephone-operating companies and the public by purchasing equipment under a system of competitive bidding.

(c) The reasons for the failure generally to reduce telephone rates and charges during the years of declining prices; and the extent, if any, to which local subscribers or the users of toll service have borne the cost of the research developments for telephone equipment and appliances, radio, motion-picture, and other inventions, including the maintenance and support of Bell Telephone Laboratories, Incorporated.

(d) The effect of monopolistic control upon the reasonableness of telephone rates and charges, upon the methods of competition with independent telephone companies, and upon the character of services rendered, and the alleged unfair or discriminatory practices with respect to such companies, and with respect to radio broadcasting or public speaker "hook-ups."

(e) The effect of mergers, consolidations, and acquisitions of control by telephone companies, including the determination of whether there has been any "write-up" in the purchase price of property, equipment, or intangibles, the fairness of the terms and conditions of any merger, consolidation, or acquisition, and the public interest therein, and the effect thereof upon rates or service.

(f) The accounting methods of the companies, particularly with reference to depreciation accounting, apportionment of investment, revenues and expenses between State and interstate operations, employee pension funds, and valuation of properties for both rate and tax purposes.

(g) The methods of competition with other companies or industries, including the determination of whether or not there has been any sale or refusal to buy from or sell to competing companies, or suppression of patents, and the expansion of the companies into fields other than telephone communication, including teletype service, telephoto service, telegraph service, broadcasting, motion-and sound-picture production and distribution, and the manufacture of electrical equipment, so far as such expansion may relate to or affect communications.

(h) Whether or not the companies have sought through propaganda or the expenditure of money or the control of channels of publicity to influence or control public opinion, legislative or administrative action, or elections.

SEC. 3. As used in the resolution the term "company" shall include all subsidiary, affiliated, associated, and holding companies or corporations and all companies directly or indirectly associated or connected with telephone companies, either by direct or indirect stock ownership, interlocking directorates, voting trusts, holding or investment companies, or any other direct or indirect means.

SEC. 4. The inquiry into certain practices of telephone carriers subject to the Communications Act of 1934, recently instituted by the Federal Communications Commission pursuant to its Telephone Division Order Numbered 11 and Statement of November 14, 1934, may be consolidated with the investigation required by this joint resolution in the manner and to the extent deemed desirable by the Commission.

SEC. 5. For the purposes of this resolution the Federal Communications Commission is hereby authorized to hold hearings; to contract

for stenographic reporting service; to utilize its regular personnel, facilities, jurisdiction, and powers insofar as practicable; and to employ for the purposes of this investigation such additional experts, including engineering, accounting, legal, and other assistants as may be found necessary, without regard to the provisions of other laws applicable to the employment and compensation of officers and employees of the United States, and to make such other expenditures, including necessary travel expenses, and expenditures for printing and binding, as it deems necessary. The Commission is also hereby authorized to have access to, upon demand, for the purposes of examination, and the right to copy, any books, papers, correspondence, memoranda, and other records of any person, partnership, company, or other organization being investigated, whether such books, papers, correspondence, memoranda, or records are in the possession of the company under investigation or are in the possession of other persons, firms, or corporations; to require by subpoena the attendance and testimony of witnesses and the production of books, papers, correspondence, memoranda, and other records which the Commission deems relevant or material to the inquiry, at any designated place of hearing within the United States; to administer oaths and affirmations, to require persons, partnerships, companies, or other organizations to submit to the Commission in writing reports and answers to specific questions, furnishing such information as the Commission may require relative to the inquiry. Such reports and answers shall be made under oath or otherwise as the Commission may prescribe and shall be filed with the Commission within such reasonable period as the Commission may prescribe, unless additional time be granted in any case by the Commission. In case of contumacy or the refusal to obey any subpoena or other order issued hereunder, the Commission may invoke the aid of any court of the United States, within the jurisdiction of which such inquiry is carried on, or where such party guilty of contumacy or refusal to obey resides or has his place of business, in requiring obedience to such subpoena or other order and any such court of the United States shall have jurisdiction to issue its order enforcing such subpoena or other order of the Commission in whole or in part; and any failure to obey such order of the court may be punished by such court as a contempt thereof. All process in such cases may be served wherever the defendant may be found.

SEC. 6. There is hereby appropriated, out of any money in the Treasury not otherwise appropriated, the sum of \$750,000, to be made immediately available to the Federal Communications Commission for the purposes of the investigation and report herein authorized and directed, and the Commission shall make special reports to Congress on its progress and its findings in this investigation.

Approved, March 15, 1935.

APPENDIX 2

FEDERAL COMMUNICATIONS COMMISSION

TELEPHONE DIVISION

Order No. 11

Commissioners Walker, Chairman, Case, and Sykes.

At a regular meeting of the Telephone Division of the Federal Communications Commission, held on the 14th day of November 1934:

The Telephone Division, having under consideration Sections 215 (a), 215 (b), 215 (c), 218, and 403 of the Communications Act of 1934, and it appearing that Section 215 (a) requires that the Commission shall examine into transactions of telephone carriers relating to the furnishing of equipment, supplies, research, services, finances, credit, or personnel; that Section 215 (b) requires that the Commission shall investigate the methods by which and the extent to which wire telephone companies are furnishing wire telegraph service and wire telegraph companies are furnishing wire telephone service; that Section 215 (c) requires the Commission to examine all contracts of carriers subject to this Act which prevent the other party thereto from dealing with another common carrier subject to this Act and shall make a report thereon to Congress; that Section 218 provides that the Commission may inquire into the management of the business of all carriers subject to this Act, and shall keep itself informed as to the manner and method in which the same is conducted, and as to technical developments and improvements thereof; and that Section 403 authorizes the Commission to institute an inquiry, on its own motion, as to the foregoing:

IT IS ORDERED, That the Division, on its own motion and without formal pleading, enter upon a proceeding of inquiry and investigation into and concerning such transactions, methods, contracts, and management of the business of telephone carriers subject to the Communications Act, for the purpose of making such a report to Congress, and for the further purpose of carrying out any provisions of the Communications Act and making such findings or issuing such orders as may be appropriate thereunder.

IT IS FURTHER ORDERED, That copies of this Order shall be served upon all telephone carriers subject to the Act, and that such carriers be made respondents to this proceeding; and that copies of said Order be sent to the Governor of each State and to each State regulatory body having jurisdiction over telephone carriers.

AND IT IS FURTHER ORDERED, That this proceeding be assigned for hearing at such times and places, and with respect to such transactions as the Commission by order or public notice may hereafter direct.

By the Commission, Telephone Division:

[SEAL]

(s.) HERBERT L. PETTEY,
Secretary.

APPENDIX 3

I. STAFF REPORTS INTRODUCED IN EVIDENCE IN THE TELEPHONE INVESTIGATION

Exhibit No.	Descriptive title
*50-----	The Scope and Structure of the Bell System.
*130-----	American Telephone & Telegraph Co., License Contract Relations, Origin and Development of License Contract.
*131-----	American Telephone & Telegraph Co., License Contract Relations, Relation Between License Contract and Ownership of Stock of Licensees.
*132-----	American Telephone & Telegraph Co., License Contract Relations, Rental of Telephone Instruments.
*134-----	American Telephone & Telegraph Co., Long Lines Department, Organization and Functions.
*135-----	American Telephone & Telegraph Co., Long Lines Department, Financial and Operating Summary.
*136-----	The Bell System, Bell Telephone System Pension Plan, Service Pension Payments.
*228-----	The Bell System, Outside Contacts of the Bell System.
*229-----	The Bell System, Banking Relations of the Bell System.
*230-----	American Telephone & Telegraph Co., Ownership of the American Telephone & Telegraph Co.
*231-----	Bell Telephone Laboratories, Inc., Corporate, Financial and Operating History.
*243-----	Bell Telephone Laboratories, Inc., Development and Research Expenses Billed to Customer Companies.
*250-----	The Bell System, Bell Telephone Securities Co.
*289-----	Bell System Policies and Practices in Radio Broadcasting.
*292-----	Western Electric Co., Inc., Prices of Telephone Apparatus and Equipment, Comparisons with Other Manufacturers.
*293-----	American Telephone & Telegraph Co., The Hand Telephone Set.
*580-----	American Telephone & Telegraph Co., Long Lines Department, Property Not Used and Useful.
*581-----	Actuarial Aspects of Bell Telephone System Pension Plan.
*582-----	Investments of Bell Telephone System Pension Funds.
*583-----	Administrative and Financial Aspects of Bell Telephone System Pension Plan.
*1359-----	American Telephone & Telegraph Co., Interest Charged Associated Telephone Companies on Loans.
*1360-A, vol. 1---	American Telephone & Telegraph Co., Corporate and Financial History, vols. I, II, and III.
*1360-B, vol. 2---	
*1360-C, vol. 3---	
*1361-----	American Telephone & Telegraph Co., Long Lines Department, Division of Message Toll Business Between Long Lines and Associated Companies.
*1362-A, vol. 1---	American Telephone & Telegraph Co., Security Investments, vols. I, II, III, IV and V.
*1362-B, vol. 2---	
*1362-C, vol. 3---	
*1362-D, vol. 4---	
*1362-E, vol. 5---	
*1364-----	Associated Bell Telephone Companies, Financial and Operating Data (by companies and by States).
*1946-A, vol. 1---	Electrical Research Products, Inc., vols. I, II, and III.
*1946-B, vol. 2---	
*1946-C, vol. 3---	
*1950-A, vol. 1---	Presentations by American Telephone & Telegraph Co. of License Contract Costs, vols. I and II.
*1950-B, vol. 2---	
*1951-A, vol. 1---	The Engineering and Research Departments of the Bell System, vols. I and II.
*1951-B, vol. 2---	
*1952-----	Western Electric Co., Inc., Corporate Structure, Manufacturing Facilities and Cost Accounting System.

I. STAFF REPORTS INTRODUCED IN EVIDENCE IN THE TELEPHONE INVESTIGATION—Continued

Exhibit No.	Descriptive title
*1953.....	American Telephone & Telegraph Co., Long Lines Department, Analysis of Depreciation Reserve.
*1954.....	American Telephone & Telegraph Co., Long Lines Department, Estimated Depreciation Reserve Requirements by Classes of Plant (Supplement to Report "Analysis of Depreciation Reserve").
*1955.....	American Telephone & Telegraph Co., Long Lines Department, Plant Retirement Accounting Practices Pole Lines.
*1956.....	American Telephone & Telegraph Co., Long Lines Department, Rental of Plant.
*1957.....	American Telephone & Telegraph Co., Long Lines Department, Analysis of Maintenance Expenses.
1958.....	American Telephone & Telegraph Co., Long Lines Department, Analysis of General and Miscellaneous Expenses.
*1959.....	American Telephone & Telegraph Co., Long Lines Department, Purchases of Property from Subsidiary Companies.
*1960.....	American Telephone & Telegraph Co., Long Lines Department, Sales of Property to Subsidiary Companies.
1961.....	American Telephone & Telegraph Co., Long Lines Department, Summary Statement of Investment and Earnings, Calendar Years 1936-37.
*1989.....	Patent Structure of the Bell System, Its History and Policies and Practices Relative Thereto.
*2089-A, vol. 1.....	American Telephone & Telegraph Co., Depreciation Accounting and Engineering Methods, vols. I, II, and III.
*2089-B, vol. 2.....	
*2089-C, vol. 3.....	
*2090-A, vol. 1.....	
*2090-B, vol. 2.....	Western Electric Co., Inc. (and predecessor, Western Electric Co., Illinois), Financial History, vols. I, II, III, and IV.
*2090-C, vol. 3.....	
*2090-D, vol. 4.....	
*2091.....	
2092.....	Western Electric Co., Inc., Profits and Price Trends.
2093.....	Bell Telephone Laboratories, Inc., Development and Research Work Performed for Western Electric Co., Inc.
2094.....	Atlantic & Pacific Telephone & Telegraph Co.
2095.....	American Telephone & Telegraph Co., Long Lines Department, Transoceanic Radio Telephony.
	American Telephone & Telegraph Co., Long Lines Department, Exhibits for Report on Transoceanic Radio Telephony (to accompany exhibit 2094).
*2096-A.....	Control of Telephone Communications, vol. I, Control of American Telephone & Telegraph Co.
*2096-B.....	Control of Telephone Communications, Appendix A—Data Relating to Federal Control of the Bell Telephone System, Aug. 1, 1918, to July 31, 1919.
*2096-C.....	Control of Telephone Communications, vol. II—Administrative Control of the Associated Bell Telephone Companies.
*2096-D.....	Control of Telephone Communications, vol. III—Control of Independent Telephone Companies.
*2096-E.....	Control of Telephone Communications, vol. IV—Politics of Control.
*2096-F.....	Control of Telephone Communications, vol. V—Financial control of the Telephone Industry.
*2096-G.....	Control of Telephone Communications, vol. VI—Effect of Control upon Telephone Service and Rates.
2104.....	Comparison of Bell System and Commission Resources.
*2105.....	Western Electric Co., Inc., Costs of Record and Their Relation to Selling Prices of Telephone Apparatus and Equipment Comparisons with Independent Manufacturers.

1 STAFF REPORTS INTRODUCED IN EVIDENCE IN THE TELEPHONE INVESTIGATION—Continued

Exhibit No.	Descriptive title
*2106-----	Western Electric Co., Inc., Manufacturing Costs of Telephone Apparatus and Equipment, Comparisons of Western's Costs of Record, with Maximum Permissible Costs and Justifiable Costs.
2107-----	Western Electric Co., Inc., Reasonableness of Stated Profits.
*2108-----	Bell System Methods of Publishing Telephone Directories.
*2110-----	Bell System Patent Control; Its Effects and Suggested Remedies.
*2112-----	Analysis of Profits Affected by License Agreements Between the American Telephone & Telegraph Co. and the General Electric Co.
2114-----	Financial Cost of Rendering License Contract Services.
2115-----	Cost of Capital to the American Telephone & Telegraph Co.

II. REPORTS PREPARED BY TELEPHONE RATE AND RESEARCH DEPARTMENT, TELEPHONE INVESTIGATION, NOT INTRODUCED IN EVIDENCE

DESCRIPTIVE TITLE

- *Message Toll Telephone Rates of Long Lines Department and Associated Companies of American Telephone & Telegraph Co. at January 15, 1937 (Interstate and Intrastate Telephone Toll Rate Schedules).
- *The Classified Toll Rate Structure and Basic Rate Practices for Message Toll Telephone Service (as Developed by the American Telephone & Telegraph Co. and the "Associated Bell Companies" in the United States).
- *General Review of Operating Results of the Bell System and its Principal Functional Divisions for the years 1936 and 1937 and Certain Prior Years—and Detailed Comparison of Operating Results of Long Lines Department for the Years 1936 and 1937.
- Summary of Current Operations, American Telephone & Telegraph Co., Long-Lines Department, January through April 1938.
- *Analysis of "License Contract" Servicing Relations between the American Telephone & Telegraph Co.'s General Department and its Long Lines Department.
- Relation of Book Cost of Long Lines Plant and Equipment to the Cost of that Plant and Equipment at Current Cost Levels.
- *The "Price Trend Review" of the American Telephone & Telegraph Co., and Prices and Pricing Policies of Western Electric Co., Inc.
- Rentals Paid for Use of Plant and Equipment, Long Lines Department, American Telephone & Telegraph Co.
- *Fundamental Legal Problems Underlying the Regulation of Interstate Telephone Rates.
- Stimulation of Business as a Factor in Telephone Toll Rate Adjustments.
- *The Problem of the "Rate of Return" in Public Utility Regulation, with Special Reference to the Long Lines Department of the American Telephone & Telegraph Co.
- *Factors Underlying the "Rate of Return" in Public Utility Regulation, as Disclosed in Court and Commission Decisions.
- *Final Report of the Telephone Rate and Research Department, Federal Communications Commission.

*Reports denoted by asterisk were planographed and distributed to State commissions and other interested parties.

APPENDIX 4

FEDERAL COMMUNICATIONS COMMISSION

WASHINGTON, D. C.

TELEPHONE DIVISION

Order No. 13

SPECIAL INVESTIGATION DOCKET No. 1.

At the regular meeting of the Telephone Division of the Federal Communications Commission, held at its offices in Washington, D. C. on the 4th day of March 1936: Present—Chairman Walker and Commissioners Brown and Prall.

It appearing, that by Joint Resolution of Congress (Public Resolution No. 8, 74th Congress) approved March 15, 1935, the Federal Communications Commission was authorized and directed to investigate and report to Congress on certain matters with respect to the American Telephone and Telegraph Company, all other companies engaged directly or indirectly in telephone communications in interstate commerce and certain other kinds of companies; and,

It further appearing that by virtue of an order of the Federal Communications Commission, adopted in executive session, following the receipt by the Commission of said joint resolution, and, by virtue of General Order No. 1, adopted by the Federal Communications Commission on July 17, 1934, establishing the Telephone Division and investing it with the jurisdiction of the Commission over all matters relating to or connected with telephone communication (other than broadcasting) by wire, radio, or cable, the Special Investigation so authorized and directed, was assigned and referred to the Telephone Division for appropriate action; and,

It further appearing that the Telephone Division did undertake to investigate and is now in the course of investigating the matters and things set forth in said Joint Resolution and that as a result of such investigations information and data have been, and in the immediate future will be, secured and obtained, which information and data should be placed in proper form for report to the Congress of the United States.

It further appearing that the purposes of the Special Telephone Investigation will be best served by the adoption of informal procedure.

IT IS ORDERED:

I. That the practice and procedure in the Special Telephone Investigation shall be informal and such as is customary and appropriate to special Congressional committees of inquiry.

II. That the Special Telephone Investigation be assigned for hearing before the Telephone Division, at such times and places, and with respect to such transactions and matters as the said Telephone Division, by order or notice, may hereafter direct.

III. That the Chairman of the Telephone Division, or other member thereof, is authorized and empowered to sign and issue subpoenas requiring the attendance and testimony of witnesses and the production of any books, papers, schedules of charges, contracts, agree-

ments, documents, and other records relating to any matter under investigation.

IV. That notice of hearings in the Special Telephone Investigation be given by depositing a copy of the order or notice assigning such hearing or hearings in the office of the Secretary of the Commission, Washington, D. C., or in such other manner as said Telephone Division may direct.

By the Commission, Telephone Division.

[SEAL]

[s.] HERBERT L. PETTEY,
Secretary.

APPENDIX 5

[Copy]

1882 CONTRACT BETWEEN THE WESTERN ELECTRIC CO. AND THE AMERICAN BELL TELEPHONE CO., AS AMENDED BY MEMORANDUM AGREEMENT, DATED APRIL 8, 1908

This Agreement made this sixth day of February A. D. 1882, by and between The American Bell Telephone Company, a corporation created and existing under the laws of the Commonwealth of Massachusetts, of the first part, and the Western Electric Company a corporation created and existing under the laws of the State of Illinois of the second part.

Witnesseth:

Whereas said second party desired to be employed by said first party to manufacture the telephones required by it, said first party, and to be licensed to manufacture telephonic appliances and apparatus, other than telephones under letters patent now owned, or controlled, or which may hereafter be owned or controlled by said first party, and whereas said second party owns certain inventions, patents and rights under patents relating to telephones and telephonic appliances.

Now therefore it is agreed—

1. Said second party agrees that it will if said first party shall elect to purchase the same at any time within six months from the date hereof, sell, assign, and transfer to the first party at the actual cost thereof to it, said second party, either or any, or all the inventions in electrical speaking telephones, or improvements therein, or applicable thereto, which it, said second party, now owns, and further that it, said second party, will from time to time if, and whenever it shall acquire any inventions in electric speaking telephones, or improvements therein, or applicable thereto, forthwith notify said first party thereof and that it will, in case said first party shall elect to purchase the same within six months after such notice sell, assign, and transfer the same to said first party at the actual cost thereof to said second party.

The word "telephone" as used in this contract includes all instruments employed for the electrical transmission of articulate speech, including therein all attachments and devices which serve to cause to improve, or to modify, the articulating current, or the effects thereof.

2. Said first party agrees that it will employ said second party during the existence of this contract to manufacture telephones.

required by it, The American Bell Telephone Company, whether for use in the United States, or for export, upon the terms and conditions following, that is to say:

Said telephones shall be manufactured only at such of the manufactories of said second party as said first party may from time to time designate.

At all times during their manufacture and upon their completion the instruments and the materials employed shall be subject to the inspection and acceptance of superintendents and inspectors, appointed by said first party.

The price to be paid therefor shall be the actual cost thereof, with an addition of twenty per cent of such cost as manufacturer's profit.

Said second party shall promptly manufacture and supply all telephones ordered by said American Bell Telephone Company and shall provide itself with facilities for making them in such quantities as the cost of business may demand.

Said telephones shall be of such patterns and styles and shall embody such inventions, and improvements, as said first party may from time to time prescribe, and shall be made in all respects as they shall direct as to style, material, workmanship and finish.

In addition to the patent marks and figures said telephones shall bear such other marks and figures as said American Bell Telephone Company shall from time to time direct and no others.

Said manufacture shall be subject to such regulations as may in the opinion of the first party be necessary for its protection and as it shall from time to time prescribe to said second party. ~~Except as in this article provided for the second party shall not engage in the manufacture of telephones within the United States.~~ Except as in this article provided for the second party shall engage in the manufacture of telephones within the United States only under such restrictions as the first party may from time to time impose.

Said second party faithfully complying with the terms of this employment, said first party agrees that it will during the existence of this contract employ no others to manufacture telephones.

3. Said second party hath granted and doth hereby grant to the first party the sole and exclusive right and license during the full term for which patents thereon have been, or may be granted, to make, use, and sell, and to license others, except only the existing licensed manufacturers of said first party named in article 4 hereof, to make, use, and sell in call bells, switches, and other telephonic appliances, any inventions, or improvements therein, which it, said second party, does not or may hereafter own, or control, in whole, or in part, by contract, or otherwise, whether patented or not.

"Telephonic appliances" include calls, switches, switchboards, annunciators, exchange furniture, and other apparatus, and devices adapted for use on or for telephone lines, except telephones as above defined.

The second party agrees that it will from time to time and at all times, do, execute, and deliver such other and further acts, and instruments, if any, as may be necessary to secure to and vest in said first party such sole and exclusive right and license.

4. Said first party hereby grants and agrees to grant (subject, however, as to inventions hereafter directly acquired by said first party to the provisions of j of this article) to the second party a license ex-

clusive, except as hereinafter stated upon the terms and conditions and subject to the limitations herein expressed, during the full term for which Letters Patent thereon have been, or may be granted, to make and to sell call bells, switches, and other telephonic appliances as above defined, embodying any inventions or improvements thereon which it, said first party, does now, or may hereafter own, or control (including herein the inventions and improvements licensed to it, said first party, by said second party in the previous article hereof) but said second party shall and said second party hereby agrees that it will

(a) Assume, and pay, or discharge any and all royalties and other obligations which said first party is, or may be bound to pay or perform on, or on account of said inventions, or any of them.

(b) Within the United States sell such apparatus only to the licensees of telephones of The American Bell Telephone Company and to them at prices not exorbitant or unreasonable, and under the terms and limitations hereinafter stated. Such prices are to be uniform for the different classes of licensees of said American Bell Telephone Company.

Within the United States sell such apparatus to the licensees of telephones of The American Bell Telephone Company at prices not exorbitant or unreasonable and under the terms and limitations hereinafter stated; such prices are to be uniform for the different classes of licensees of said American Bell Telephone Company—and to sublicensees and nonlicensees of said American Bell Telephone company only under such restrictions as the first party may from time to time impose.

(c) In selling such appliances for use in foreign countries it will in each case retain the title thereto until they are landed in the foreign country to which they are sent and will insert in its billheads therefor the following, or such similar notice as the first party may require, viz:

"The articles herein named are to remain the property of the Western Electric Company until landed in _____. It is understood and agreed to by the purchaser that no right to use the articles, herein named, in the United States, and no right to use any patents whatever granted by the United States is conveyed hereby, no consideration having been paid for such use."

and will insert in its bill heads for appliances which it is authorized to sell to licensees of The American Bell Telephone Company in the United States the following, or such similar notices as the first party may require, viz:

"The call bells and other telephonic appliances, included in this bill, are made under patents which belong to The American Bell Telephone Company, or which they have the exclusive right to use and are only licensed to be used in connection with telephones licensed by said company, and at stations using such telephones; and the purchaser by accepting them agrees not to use them otherwise, nor to dispose of them to anyone except those so licensed."

and will conform to such other similar regulations as said first party may reasonably require for its protection and may from time to time prescribe to said second party.

(d) ~~Mark such apparatus in addition to the patent numbers and marks with such other numbers, marks, notices, or names, and no others, and in such manner as said first party shall from time to time prescribe.~~

Mark such apparatus in addition to the patent numbers and marks with such other numbers, marks, notices, or names and in such manner as said first party shall from time to time prescribe.

(e) Promptly manufacture and supply all such apparatus as it is hereby authorized to supply, and of such patterns and styles, and embodying such inventions and improvements as may be ordered by the parties to whom it is authorized to dispose of the same, and will provide itself with facilities for making such apparatus in such quantities as the course of business may demand.

~~(f) Will on the first days of January and July in each year, during the continuance hereof, make full and true returns under oath of all and singular the telephonic appliances and apparatus manufactured hereunder.~~

Will, during the continuance hereof, make full and true returns under oath of all and singular telephonic appliances and apparatus manufactured hereunder if and when such return may be required by the first party.

~~(g) And except as in this article provided, shall not engage in the manufacture of telephonic appliances within the United States.~~

And except as in this article provided shall engage in the manufacture of telephonic appliances within the United States only under such restrictions as the first party may from time to time impose.

(h) The party of the second part agrees that all instruments, or apparatus, manufactured under this license, shall be of the most approved forms and first class in point of material, finish, and workmanship and shall be subject to the inspection of the party of the first part.

~~(i) Will on the first day of January and July in each year, during the continuance hereof, make full and true returns under oath of all and singular the telephonic appliances and apparatus manufactured hereunder.~~

The rights in this article granted are subject to the existing rights of Post & Company of Cincinnati, Ohio, under contract dated June 27, 1879, with the National Bell Telephone Company; of Davis and Watts of Baltimore, Maryland, under contract dated June 24, 1879, with the National Bell Telephone Company; of the Electric Merchandising Company under contract dated June 11, 1879, with the National Bell Telephone Company; and to the manufacturing rights of the Telephone & Telegraph Construction Company under contract dated October 24, 1877, with Gardiner G. Hubbard, Trustee. But the first party agrees that it will within six months after request therefor from said second party give notice to terminate such of such last-named contracts as can be so terminated as therein provided; and it is agreed that the second party shall until such termination be entitled to receive all royalties accruing to the first party thereunder after July 1, 1881, on account of manufactures less only royalties which said first party may be bound to pay on account thereof.

(j) In case said first party shall hereafter acquire any invention, or inventions, in telephone appliances as above defined, other than such as it may hereafter acquire by license from the second party

under article 3 hereof it shall forthwith notify said second party thereof, and such invention, or inventions, shall in case said second party shall so elect within six months from the date of such notice, come under the provisions of this article 4 hereof with like effect as if such invention, or inventions, were now owned by said first party; but the second party, in case it shall elect to have such license, shall forthwith upon making such election repay to said first party the cost of such invention, or inventions, and assume any and all royalties and other obligations which said first party may be bound to pay or perform on or on account of such invention, or inventions.

5. Whereas the due prosecution of the business of said telephone company and of its licensees users of its telephones requires that telephones and telephonic appliances of the most approved forms and workmanship be promptly furnished, and as herein provided, and whereas the said telephone company is unwilling to permit the reasonable expectations of its licensees in this regard to be disappointed, and whereas the time required to ascertain judicially whether the second party shall or shall not have failed to perform its obligations hereunder, would cause a delay which might work great, irreparable, and unascertainable damage to said telephone company and its said licensees, now it is an integral part of this contract, and is also a limitation of, and an exception to, the license hereby granted, and the employment hereby contracted for, that—

(1) Whenever the directors, or executive committee, of said telephone company shall be of opinion that the second party has failed in its obligations in this respect; or that there is imminent danger or probability that it will so fail, the said telephone company may, without notice or demand, forthwith manufacture, or cause to be manufactured elsewhere, either by itself or others, such instruments as in its opinion may be required to meet the emergency and may continue, and prepare to continue, such manufacture elsewhere so long as in its opinion may be needful; and for the purpose of obtaining such supply, the opinion of its directors, or its executive committee, arrived at in good faith, shall be conclusive as to its right so to obtain a supply elsewhere, and its action, based thereon, shall not be restrained by any court or judicial power whatever; but such decision shall not terminate this contract and license, nor shall it prevent the second party from furnishing apparatus to any persons who may lawfully order the same according to the terms hereof.

(2) If it shall thereafter be determined by agreement of the parties, or by the final judgment of any Court of competent jurisdiction that the opinion so acted on, by said telephone company was erroneous, then the consequences of such error shall be that said telephone company shall pay to said second party all the profits which it, said second party, would actually have realized and received if such supply, so obtained elsewhere, had been obtained of said second party and said decision of said telephone company shall not authorize it thereafter to obtain such supply elsewhere.

(3) If it shall be determined by agreement of the parties, or by the final judgment of any court of competent jurisdiction, that said second party did violate, or failed to comply with, or has violated, or failed to comply, with any of the terms of this agreement then this license to manufacture telephonic appliances shall be deemed to have been nonexclusive and the obligation to employ the second party to manu-

facture telephones to have ceased as from the time of such violation, or default, and said license shall remain nonexclusive, and the first party shall be under no obligation to employ the second party to manufacture telephones, unless, and until said second party shall, upon notice from said first party, have remedied or repaired such default, violation, or neglect and shall have repaid and made good to said first party any and all loss, cost, damage, and expense occasioned thereby, or resulting therefrom, and shall reasonably satisfy said first party that it is prepared and intends to conform hereto, whereupon said license shall again become exclusive and the obligation to employ the second party to manufacture telephones shall revive, such license and such employment being however subject to all the terms, conditions, limitations, and stipulations, inclusive of this article, herein contained.

6. Existing interferences in cases of inventions in telephonic appliances shall be disposed of as counsel of the parties hereto may advise, to recognize and protect the rights of the several inventors to their respective inventions, subject to the decisions of the patent office.

7. The first party agrees that it will, so long as, and insofar as the license herein granted the second party is and shall remain exclusive, consent to the use of its name either alone, or together with that of the second party, as the case may require, in all such suits as counsel of the parties may advise are necessary or proper for the protection of such rights against infringement, but the whole expense of such litigation shall be borne by the second party.

8. This contract shall remain in force until it shall be terminated by the mutual agreement of the parties hereto.

In Witness Whereof The American Bell Telephone Company has caused these presents to be signed in its name and behalf by William H. Forbes, its President, and its corporate seal to be hereto affixed, and the Western Electric Company has caused these presents to be signed in its name and behalf by Anson Stager its President, and its corporate seal to be hereto affixed the day and year first above written.

[Before the execution hereof the following interlineations were made, viz: on page 3 the word "employment" (substituted for the word "agreement" erased), the word "thereon" and the words "except only the existing licensed manufacturers of said first party named in article 4 hereof"; on page 4 the words "or perform"; on page 7 the words "to the manufacturing rights" and (at the end of paragraph (i)) the words "on account of manufactures less only royalties which said first party may be bound to pay on account thereof"; on page 8 the words "or perform" and the word "said"; on page 9 the words "or has violated or failed to comply with".]

[SEAL]

THE AMERICAN BELL TELEPHONE CO.,
By W. H. FORBES, *President*.

WESTERN ELECTRIC CO.,
By ANSON STAGER, *President*.

Attest:
[SEAL]

S. G. LYNCH, *Secretary*.

APPENDIX 6

STANDARD SUPPLY CONTRACT (WESTERN ELECTRIC Co.)

Memorandum of agreement dated June 2, 1930, between Western Electric Company, Incorporated, a corporation of the State of New York, hereinafter called the Electric Company, and ----- a corporation of the State of -----, hereinafter called the Telephone Company.

Witnesseth, That in consideration of the covenants and agreements herein contained, it is agreed by and between the parties hereto as follows:

ARTICLE I—SCOPE

1. *Manufacture and purchase of materials.*—The Electric Company will manufacture or purchase materials which the Telephone Company may reasonably require for its business and which it may order from the Electric Company; provided however, that nothing herein contained obligates the Telephone Company to purchase any materials from the Electric Company.

2. *Delivery of materials.*—The Electric Company will deliver said materials to the Telephone Company upon its written orders, in such quantities, in such manner, and at such times as the Telephone Company may reasonably designate.

3. *Inspection of materials.*—The Electric Company, as authorized by the Telephone Company, will make technical and engineering inspections of materials not of its own manufacture furnished by it to the Telephone Company.

4. *Equipment specifications and installations.*—The Electric Company will prepare such equipment specifications and perform such installations of materials as the Telephone Company may reasonably require for its business and may order from the Electric Company.

5. *Distributing storerooms.*—The Electric Company will maintain distributing storerooms as at present established or at such points as from time to time may be agreed upon, for the distribution of materials to the Telephone Company.

6. *Stocks of materials.*—(a) The Electric Company will exercise due diligence in maintaining at all times, at its distributing storerooms, reasonable stocks of materials, except apparatus which must be specially assembled for each job (such as central office switchboards) and other materials which are customarily shipped direct, such as poles and directories.

“Reasonable stocks” means such quantities as the Telephone Company may reasonably require for its business, giving due consideration to variations in demand, seasonal requirements, conditions of the market, and length of time required to transport materials from the sources of supply to the Electric Company’s distributing storerooms.

(b) The Electric Company will carry such special stocks of materials as the Telephone Company may authorize.

“Special stocks” means all stocks authorized by the Telephone Company other than or in excess of reasonable stocks.

7. *Returned materials.*—The Electric Company will receive and classify any materials which the Telephone Company may return from time to time, delivered f. o. b. the Electric Company’s distributing storerooms or other points designated by the Electric Company.

Such materials when received at the Electric Company's distributing storerooms shall be divided into classes: A, B, and C as defined below. Such classification shall be based on visual inspection by experienced storeroom employees and be subject to the approval of the Telephone Company. Such visual inspection is the only inspection contemplated in the rates of remuneration specified in paragraph 4, article II of this agreement. Any electrical or mechanical inspection required by the Telephone Company on materials classified C by visual inspection, shall be considered as part of the repair work and performed under the terms of paragraph 6 (b) article II of this agreement.

Class A. Surplus used returned materials not presently required by the Telephone Company for its own use, for which the Electric Company has allowance prices and which can be repaired and sold by the Electric Company to other Bell System companies shall be classified A. The Electric Company will purchase such materials from the Telephone Company.

Class B. Returned materials which have no value except as junk shall be classified B. Such materials shall, at the option of the Telephone Company, be shipped to the Electric Company's reclamation plants, or sold by the Electric Company. If advantageous for their economical disposition such materials shall be dismantled by the Electric Company at its distributing storerooms.

Class C. All other returned materials shall be classified C. The Electric Company will credit the Telephone Company for, store, insure, and carry the investment in such materials until reissued to the Telephone Company on its orders, or otherwise disposed of with its approval.

For insurance purposes, Class C materials shall be valued at fifty percent (50%) of current value new and shall be insured by the Electric Company in accordance with its current insurance practice.

8. *Transportation charges.*—The Electric Company as authorized by the Telephone Company and insofar as practicable will pay for the account of the Telephone Company such of the following transportation charges as under the Electric Company's prices and terms should be borne by the Telephone Company:

(a) On shipments of materials made hereunder to the Telephone Company.

(b) On shipments of materials returned from the Telephone Company to the Electric Company's distributing storerooms or other points designated by it.

(c) On shipments of class B returned materials from the Electric Company's distributing storerooms to its reclamation plants or other points of disposition designated by the Electric Company.

The Electric Company will adjust claims with carriers arising out of shipments hereunder.

9. *Repairs to materials.*—The Electric Company will maintain repair shops as at present established or at such points as from time to time may be agreed upon and will make such repairs to returned materials as the Telephone Company may reasonably require.

10. *Other services.*—The Electric Company will perform such other services as the Telephone Company may reasonably require from time to time.

ARTICLE II—PRICES AND TERMS

1. *General.*—The Electric Company's prices and terms shall be as low as to its most-favored customers for like materials and services under comparable conditions.

2. *Materials, equipment specifications, and installations.*—The prices to be paid by the Telephone Company to the Electric Company for materials, equipment specifications, and installations shall be those established from time to time by the Electric Company. Such prices insofar as practicable and any conditions affecting them not specifically provided for in this article shall be included in the Electric Company's published price lists. Prices for materials shall include inspection provided for in paragraph 3, article I, of this agreement.

3. *Carrying special stocks of materials.*—For carrying special stocks of materials the Telephone Company will pay the Electric Company monthly at the rate of eight percent (8%) per annum on its average monthly investment in such stocks, beginning thirty (30) days after such materials have been placed in special stock.

4. *Returned materials.*—Class A materials shall be credited to the Telephone Company at the Electric Company's allowance prices.

Class B materials which are shipped to the Electric Company's reclamation plants shall be credited to the Telephone Company at the Electric Company's allowance prices.

The allowance prices referred to above for classes A and B materials shall be those established from time to time by the Electric Company. Such allowance prices insofar as practicable and any conditions affecting them not specifically provided for in this article shall be included in the Electric Company's published price lists.

Class B materials which are not shipped to the Electric Company's reclamation plants shall be credited to the Telephone Company at the prices realized by the Electric Company from their sale, less remuneration for its services, other than dismantling, as follows:

Seven percent (7%) of the amounts received by the Electric Company before deduction of transportation charges, where deliveries are made to the Electric Company's distributing storerooms.

One percent (1%) of the amounts received by the Electric Company, before deduction of transportation charges, where deliveries are made direct to a destination designated by the Electric Company, other than its distributing storerooms.

In case class B materials are dismantled by the Electric Company at its distributing storerooms, the Telephone Company will pay the Electric Company its costs of such dismantling, determined in accordance with paragraph 6 (b) of this article.

Class C materials shall be credited to the Telephone Company at the Electric Company's current prices for corresponding new materials, except that major units of central office and multiple private branch exchange switchboards may be credited at valuations mutually agreed upon. When reissued all class C materials shall be paid for by the Telephone Company at the prices at which credited.

The Telephone Company will pay the Electric Company for its services in connection with materials credited as class C three and one-half percent (3½%) of the amounts so credited and interest at a reasonable rate upon its investment in such materials; such interest to be billed monthly.

In case class C materials are damaged or destroyed by fire, the Telephone Company will reimburse the Electric Company for the difference between the amounts recovered by the Electric Company on account of insurance carried and the amounts which were credited to the Telephone Company for such materials, and in addition for any unbilled repairs to such materials.

5. *Transportation charges.*—The Telephone Company will reimburse the Electric Company for transportation charges paid by it as provided for in paragraph 8, article I, of this agreement.

6. *Repairs to materials.*—The Telephone Company will pay the Electric Company for repairs provided for in paragraph 9, article I, of this agreement as follows:

(a) At established prices which shall be agreed upon from time to time insofar as practicable and in effect on date repairs are billed to the Telephone Company.

(b) For repairs not covered by established prices, at the Electric Company's costs thereof determined as follows:

Materials: At prices prescribed in paragraph 2 of this article.

Direct labor: At actual cost.

Indirect labor, local, and general expense: At rates applied to direct labor, which rates shall be agreed upon from time to time and shall be sufficient to cover such indirect labor and expense applicable to the operation of such distributing storeroom shops.

Interest on investment: At a reasonable rate on the Electric Company's investment required to make such repairs.

7. *Other services.*—The Telephone Company will pay the Electric Company for other services as provided for in paragraph 10, article I, of this agreement as follows:

(a) At established prices which shall be agreed upon from time to time in so far as practicable.

(b) For such services not covered by established prices, at the Electric Company's costs thereof determined as follows:

Materials: At prices provided for in paragraph 2 of this article.

Direct labor: At actual cost.

Local and general supervision: At twenty-five percent (25%) of direct labor.

Expense items: At actual cost.

Interest on investment: At a reasonable rate on the Electric Company's investment required to perform such services.

8. *Payment.*—As of the first of every month the Electric Company will render monthly statements of account which shall be due and payable by the Telephone Company 30 days after date of such monthly statements. If payment is deferred, the account shall thereafter bear interest at a reasonable rate.

ARTICLE III—GENERAL PROVISIONS

1. *Liability.*—(a) The Electric Company shall be liable only for direct damages arising from failure to exercise reasonable care and diligence in performing its obligations hereunder.

(b) If any materials manufactured by the Electric Company shall prove to be defective or if any materials furnished by the Electric Company and inspected as provided for in paragraph 3, article I, of this agreement shall prove to be not in accordance with the specifica-

tions, the Electric Company, at the option of the Telephone Company, will accept the return of such materials and allow full credit therefor or replace the same at its own expense f. o. b. destination of the original shipment to the Telephone Company.

(c) In case the Telephone Company shall decide to abandon or reduce the use of or purchase from others any materials not of Electric Company manufacture or materials of Electric Company manufacture not standardized by the American Telephone and Telegraph Company, theretofore customarily purchased from the Electric Company, it will give the Electric Company reasonable notice of such intention and will reimburse the Electric Company for any loss on account of any reasonable stocks thereof on hand and any reasonable commitments made by the Electric Company prior to the receipt of such notice in anticipation of the Telephone Company's orders.

2. *Cancellation of prior agreement.*—This agreement as of the date it becomes effective supersedes the agreement between the parties hereto dated January 1, 1924, entitled "Standard Supply Contract" and all agreements supplementary thereto.

3. *Term of agreement.*—This agreement shall become effective on the 2d day of June 1930, and shall continue in force until terminated by mutual consent or by 1 year's notice in writing from either party to the other, or by the termination of the license from the American Telephone and Telegraph Company to the Telephone Company or to the Electric Company.

In witness whereof, the parties hereto have caused this agreement to be executed by their respective officers thereunto duly authorized and their corporate seals to be hereunto affixed the day and year first above written.

WESTERN ELECTRIC COMPANY, INCORPORATED,

By _____, *President.*

Attest:

_____, *Secretary.*

By _____, *President.*

_____, *Secretary.*

CONDITIONS UNDER WHICH WESTERN ELECTRIC EXTENDS THE BENEFITS
OF THE STANDARD SUPPLY CONTRACT TO BELL CONNECTING COM-
PANIES

The conditions under which we extend the benefits of the standard supply contract to Bell connecting companies are as follows:

1. The licensee telephone company to which the telephone company desiring such benefits is a subsidiary or a sublicensee, should request the Western Electric Company, in writing, to extend such benefits. The form of letter required together with the form of acceptance is attached.

2. The telephone company for which such benefits are requested should be owned or controlled by the licensee company.

3. The telephone company for which such benefits are requested should have a sublicense agreement with the licensee company; or

The volume of purchases should be sufficiently large to justify the Western Electric Company handling the business on the low basis of prices enjoyed by the licensee companies, taking into consideration the fact that the account carries no credit risk.

4. The licensee company must guarantee payment of the account of the subsidiary or sublicensee company.

It is the general intent of the contract with the licensee companies that their purchases under it should be for their own use, and the same condition applies to subsidiary or sublicensee telephone companies.

[For sublicensee companies]

DRAFT

WESTERN ELECTRIC COMPANY.

DEAR SIR: We hereby request that the standard supply contract entered into between us under date of _____ be extended to the _____ Company, which is owned or controlled by, and is a sublicensee of, this company.

In consideration of your agreeing to the extension of such contract as requested, we guarantee the payment to you of all accounts which may become due to you from the above-named company for material furnished or services rendered by you under the terms of such contract. It is the understanding that such of the services provided in the standard supply contract shall be performed for the above-named company as it may from time to time request.

It is further understood that this arrangement shall remain in force from the date of the acceptance hereof by you until terminated by agreement between us or by 90 days' notice in writing from either one of us to the other.

Please advise if this is acceptable to you.

Yours very truly,

[For nonsublicensee companies]

DRAFT

WESTERN ELECTRIC COMPANY.

DEAR SIR: We hereby request that the standard supply contract entered into between us under the date of _____ be extended to the _____ Company, which is owned or controlled by this company and whose volume of purchases of apparatus or supplies is estimated to be about _____ per year.

In consideration of your agreeing to the extension of such contract as requested, we guarantee the payment to you of all accounts which may become due to you from the above-named company for material furnished or services rendered by you under the terms of such contract. It is the understanding that such of the services provided in the standard supply contract shall be performed for the above-named company as it may from time to time request.

It is further understood that this arrangement shall remain in force from the date of the acceptance hereof by you until terminated by agreement between us or by 90 days' notice in writing from either one of us to the other.

Please advise if this is acceptable to you.

Yours very truly,

DRAFT

GENTLEMEN: We acknowledge receipt of your letter of _____ requesting that the standard supply contract entered into between us under date of _____ be extended to the _____ Company, which is owned or controlled by you.

We hereby give our consent to such extension under the terms and provisions set forth in your letter under reply.

Yours very truly,

WESTERN ELECTRIC COMPANY, INC.,
By _____.

APPENDIX 7

[Copy]

AGREEMENT BETWEEN AMERICAN TELEPHONE AND TELEGRAPH
COMPANY AND THE BELL TELEPHONE COMPANY OF PENNSYLVANIA
COVERING SERVICES, LICENSES, AND PRIVILEGES, MARCH 26, 1931

THIS AGREEMENT, dated this 26th day of March 1931, between AMERICAN TELEPHONE AND TELEGRAPH COMPANY, a corporation of the State of New York, hereinafter called the "Licensor," and THE BELL TELEPHONE COMPANY OF PENNSYLVANIA, a corporation of the State of Pennsylvania, hereinafter called the "Licensee," WITNESSETH:

WHEREAS the Licensee, as an Associated Company of the Bell System, has been and is now conducting a telephone business within the territory hereinafter defined under a certain license contract with the Licensor, particularly as evidenced by memorandum thereof dated April 27, 1920 and supplements thereto; and

WHEREAS the agreement of the parties hereto that telephones manufactured under the patents of the Licensor shall be purchased by the Licensee for use within said territory rather than furnished and repaired as theretofore by the Licensor makes it desirable to state and reaffirm in this instrument the license and service contract relations which continue in force between them.

Now, THEREFORE, in consideration of the premises and of the covenants and agreements herein set forth, the parties hereto agree as follows:

1. For the purposes of this agreement:

(a) The telephone business of the Licensee is the furnishing to the public for compensation of telephone service within the territory of the Licensee as hereinafter defined.

(b) An exchange means a system established to provide telephonic communication within a particular area usually within or embracing a city, town, or village and environs. This system consists of one or more central offices, together with the associated plant, including circuits, equipment, and telephones.

(c) The term "exchange service" applies to telephone service within an exchange area.

(d) The term "toll service" applies to telephone service between exchange areas.

2. The Licensee is licensed to use within its territory all telephones and all telephonic devices, apparatus, methods, and systems needed

for its business as defined herein which are covered by patents now or hereafter owned or controlled by the Licensor or which it may have the right to authorize the associated companies of the Bell System to use; but no such telephone, telephonic devices, apparatus, methods, or systems shall be disposed of by the Licensee without consent of the Licensor except to those licensed by the Licensor to use them or to manufacturers licensed by the Licensor.

The Licensee shall be protected and saved harmless by the Licensor from all actions or suits charging infringement of patents arising from the use of any telephones or telephonic devices, apparatus, methods, or systems which the Licensor may recommend.

All rights not specifically granted to the Licensee remain to the Licensor.

3. The Licensor will prosecute continuously fundamental work of research, investigation, and experimentation in the development of the art and science of telephony and in the development of plans, methods, systems, and ideas designed to improve telephone service and to promote safety, economy, and efficiency in the equipment, construction, and operation of the telephone plants of the associated companies of the Bell System, and will direct development work by others for the production of materials and apparatus necessary for rendering the products of such work of the Licensor available for use by such associated companies.

The Licensee shall have the right to use, and the Licensor will render available for use by the associated companies of the Bell System, as and when completed and standardized, all products of the Licensor's fundamental work of research, investigation, and experimentation, and all inventions, discoveries and patents, and all methods and systems covered by patents needed for the said business of the Licensee, and all apparatus and appliances, methods, and systems embodying such inventions, discoveries, and patents, and to this end, if any patent rights held by others in any such invention or discovery are necessary to make such invention or discovery available for such use, the Licensor will, in case such invention or discovery relates to telephones, acquire the requisite patent rights therein, and in case such invention or discovery relates to other than telephones, provide suitable arrangements for making the apparatus, appliances, methods, and systems embodying such invention or discovery available for use as aforesaid; provided that each such acquisition or arrangement can, in the judgment of the Licensor, be consummated on reasonable terms.

4. The Licensor will make and maintain continuously in effect adequate arrangements whereby telephones and other telephonic devices and apparatus needed for the business of the Licensee may be manufactured under all patents now or hereafter owned or controlled by the Licensor, or under which it may have the right to grant licenses to others, and whereby the Licensee may purchase such telephones, telephonic devices, and apparatus for use in its territory and subject to the provisions hereof, at prices which shall be reasonable and not higher than the lowest prices charged by the manufacturer from time to time to others under similar circumstances

5. The Licensor will furnish to the Licensee—

(a) Advice and assistance in general engineering, plant, traffic, operating, commercial, accounting (including the auditing of accounts),

patent, legal, administrative, and other matters pertaining to the efficient, economical, and successful conduct of said business of the Licensee; such advice and assistance to be given by the Licensor through conferences with its specialists and the issuance to the Licensee of data and conclusions, including bulletins, books, circular letters, and standard specifications and drawings, and through the performance of specific work in cases of unusual magnitude and complexity where such work is necessary or desirable.

(b) Advice and assistance in any financing required to be done by the Licensee in the extension, development, or improvement of its telephone system within its said territory and in the general matter of its finances; aid in securing funds on fair terms, as and when needed, for new construction and other expenditures, but not at any time to a greater extent than the then condition of the finances and credit of the Licensor may permit; active assistance in the marketing of the Licensee's securities; and such other necessary financial support and assistance in the premises as will tend to serve the best interests of both companies.

(c) Active assistance, cooperation, and support in connection with the adoption from time to time by the Licensee of such measures as will, in the judgment of the parties hereto, best protect and preserve the health and promote the well-being in employment of the employees of the Licensee and, in other ways, conserve the high quality of its service to the public through the maintenance of a stable, contented, and efficient personnel.

6. The Licensor will maintain continuously an organization of specialists trained in the various branches of the work required to be done by the Licensor in rendering the foregoing services, of such numbers and possessed of such technical knowledge and experience as will enable said work to be so done as to relieve the Licensee from the necessity of attempting to perform said work for itself.

7. The Licensor will maintain continuously, or cause to be so maintained, proper connections between the telephone system of the Licensee and the telephone systems of the other Associated Companies of the Bell System and between places within the territory of the Licensee which the latter is not authorized to connect.

8. The Licensee shall have the right—

(a) To extend to the subscribers and other patrons of the Licensee and of its connecting companies within its said territory the privilege of using, upon payment of the regular tolls therefor, the connections herein provided between its telephone system and the telephone systems of the other Associated Companies of the Bell System for telephonic communication between such subscribers and other patrons and the subscribers and other patrons of such Associated Companies and of their connecting companies in their respective territories.

(b) For the betterment of the service throughout its said territory, to extend to its connecting companies within its said territory, on such terms and conditions as it may determine, the benefit of such engineering and other technical advice and information with respect to construction, maintenance, repair, and operation of plant as the Licensee may receive from the Licensor.

The Licensee shall not directly or indirectly connect with the lines of the Licensor or its appointees any telephone facilities which in the judgment of the Licensor would unduly impair the quality of the service.

9. The Licensee may enjoy any of the rights-of-way and similar franchises of the Licensor to construct and maintain lines, which the Licensor can permit it to use, when and so long as in the judgment of the Licensor, it shall not interfere with the enjoyment thereof by the Licensor or its other licensees, and may, to the extent and under the conditions aforesaid, use the Licensor's overhead and underground facilities for supporting or carrying wires (both open and in cable) upon paying a pro rata share of the cost of constructing and maintaining them, computed in accordance with the then-existing practices of the parties, or such other reasonable compensation as may be agreed upon. For trunk lines from the several exchange offices to points outside of the respective exchanges, the Licensor may enjoy all rights of the Licensee to construct and maintain lines which the Licensee can permit it to use, when and so long as, in the judgment of the Licensee, it shall not interfere with the enjoyment thereof by the Licensee or its other Licensees, and may, to the extent and under the conditions aforesaid, use the Licensee's overhead and underground facilities for supporting or carrying the Licensor's wires (both open and in cable) upon paying a pro rata share of the cost of constructing and maintaining them, computed in accordance with the then-existing practices of the parties, or such other reasonable compensation as may be agreed upon. The Licensor reserves the right to use telephones on lines connecting places in the territory of the Licensee with other places in said territory which the Licensee is not authorized to connect hereunder or with places outside said territory, or connecting places outside said territory with each other. The Licensee will allow the Licensor to connect the wires of any such lines with its said lines in order to constitute thereby a through line, of which the Licensee's lines or any part of them can form a portion or link, in order to forward through communications or messages; will make or permit to be made convenient switchboard or other connections for that purpose, and as compensation for such use of its lines and for making such connections will take a share of the through toll (terminal expenses being first deducted) pro rata according to distance, and will also allow any telephone exchange located outside the territory of the Licensee to be designated by the Licensor to connect with the Licensee's lines for the purpose and substantially in the manner and upon the terms herein provided in respect of such trunk-line connections. In respect of all communications or messages originating on its lines and which are to be routed or forwarded over any lines of the Licensor or its appointees, the Licensee shall require the patron or subscriber to bind himself to pay the tolls thereon and to make every communication or message subject to such contract, stipulations, and limitations of liability as the Licensor may from time to time require, in such form as it may from time to time prescribe, and will hold the Licensor harmless from all loss or expense consequent upon the Licensee's failure so to do. Whenever the consent of a commission or other public tribunal to the use by the Licensor or the Licensee of the plant or other facilities of the other is required by law, no agreement made under and pursuant to the provisions of this paragraph shall be effective until such consent is obtained.

The Licensor may enter the offices and connect with the exchanges of the Licensee any lines to points without the territory of the Licensee or to points within said territory which the Licensee is not authorized

to connect, in order to establish communication between patrons of such exchanges and parties at such points reached by said lines, and may there operate said lines with suitable appliances; the Licensee will permit its patrons to use such lines and by its own operators will handle such communications or messages to and from its patrons, or make the proper switchboard or other connections for direct communication, as may be requested, and in such manner, not inconsistent with the proper conduct of its office, as the Licensor shall direct. But if the Licensor is not satisfied with the manner in which it is performed, it may establish its own offices and trunk and radiating lines for such purpose.

10. The Licensee will cause each of its exchanges to route, over the lines of the Licensor and of such parties as the Licensor may from time to time appoint, all communications to points outside the Licensee's territory, or to points within said territory which the Licensee is not authorized to connect, originating at such exchanges, on its lines, or at the exchanges or on the lines of its connecting companies within its territory, or coming on the wires or within the control of the exchange, where the Licensor or its said appointees has wires and will accept the communications, so far as the Licensee can lawfully control the same and unless otherwise specially directed by its patrons, but the Licensee will not solicit such special directions or receive or pay tolls for transmission over other lines unless compellable by law so to do. Each such communication on which the charge is reversed shall be considered as originating at the station against which the charge is to be made.

The Licensee shall keep and furnish an account of each such communication, and shall collect and on demand pay over to the Licensor or its said appointees, respectively, the tolls for transmission beyond the exchange, according to such rates and rules as each shall establish, and shall exhibit its accounts and the tickets from which they are made, so far as may be proper to verify the same. The Licensee, in the handling of all business interchanged hereunder shall observe the Licensor's operator's operating methods and rules from time to time established for the use of its lines and shall keep such records and furnish such reports with respect thereto as the Licensor may from time to time reasonably request.

Each exchange shall, if and when so requested by the Licensor make proper switchboard or other connection between the lines of the Licensor or its Licensees from points without such exchange and terminating in such exchange office, for the purpose thereby of making up a through line between points without such exchange. In respect of all the business referred to in this Article, the Licensee shall make no charge to its own subscriber or patron, but shall be entitled to the following compensation and none other: Upon communications originating at an exchange or toll station of the Licensee or of a connecting company of the Licensee within its territory and passing over the lines of the Licensor or its appointees, compensation based upon the average revenue per originating message in accordance with the schedule of commissions set forth in Appendix A hereto attached and made part hereof; said compensation to cover the use of the necessary switchboard and trunking and other toll terminal plant and facilities and all the facilities and services of an exchange furnished for and in connection with such communications whether to or from such ex-

change, except the exchange service facilities required to establish a connection between an exchange station and the toll terminal plant, for the use of which excepted facilities the Licensee is compensated by its rates for exchange service in such exchange. In case an exchange shall be required to make a switchboard connection for the purpose of making up a through line between points without such exchange, the exchange shall receive, for making such connection, such compensation as may be agreed upon.

11. In consideration of the premises and for all benefits accruing to the Licensee hereunder, the Licensee shall pay to the Licensor a sum equal to two and one-half percent ($2\frac{1}{2}\%$) of the total gross earnings of the Licensee, which shall be payable in monthly installments, as herein provided, and in accordance with the established practice of the parties hereto, and shall be computed as follows: Such total gross earnings shall be computed by adding the following accounts described and defined in the Uniform System of Accounts for Telephone Companies prescribed by the Interstate Commerce Commission: Account 500 Subscribers' Station Revenues, Account 501 Public Pay Station Revenues, Account 504 Private Exchange Lines, and Account 510 Message Tolls, and by deducting from the total thereof, Account 304 Uncollectible Operating Revenues. To such gross earnings of the Licensee, there shall be added an amount equal to the gross earnings, similarly computed, for each other telephone company operating in the territory of the Licensee in which the Licensee owns a majority either of the voting stock or of the entire capital stock; provided, however, that on application by the Licensee for the exclusion of all or any portion of such gross revenues of any such operating company the question shall be carefully considered and determined.

The amount of each installment of said sum equal to two and one-half percent ($2\frac{1}{2}\%$) of the Licensee's total gross earnings due for each month shall be determined by such total gross earnings of the second preceding month, computed in the manner aforesaid, and a statement, over the signature of the proper accounting officer of the Licensee, of its total gross earnings for each calendar month, computed in the manner aforesaid, shall be sent to the Comptroller of the Licensor, or to such other officer of the Licensor as it may theretofore designate, on or before the twenty-fifth day of the next succeeding month and payment in New York funds shall be made on or before the tenth day of the month next following, that being the month for which such payment is due.

The Licensee will make such reports, giving such information regarding the operations of its exchanges and lines as the Licensor may from time to time reasonably request.

12. If the Licensee shall fail to pay any sums due hereunder for thirty days after the same shall become payable or shall violate any other term or condition of this agreement and shall fail to remedy or repair the same for sixty days after written notice thereof from the Licensor, the Licensor may, if it shall so elect, by written notice to Licensee, terminate the rights of the Licensee hereunder and may resort to any of its rights and remedies in law or in equity under the patent laws or otherwise, including the remedy by injunction against the Licensee or those claiming under it.

13. The contractual relations hereunder are personal to the Licensee, and any assignment or attempt to assign its rights hereunder or the lines established hereunder or any of them, by act of the party or operation of law, without the written consent of the Licensor, will be good ground for a cancellation hereof by the Licensor. Whenever the Licensor grants to others the rights for exchanges or any of its rights under Articles 9 and 10 hereof or for connecting lines or any other rights remaining to it, the stipulations hereof relating thereto shall be binding upon and inure to the benefit of such grantees, and the Licensor shall not be responsible for their acts or defaults. If the Licensor shall transfer to any party who shall agree to perform the stipulations hereof, its title to the patent rights under which telephones and apparatus are licensed herein, and its then existing rights hereunder, the provisions hereof shall inure to the benefit of and be binding upon such party in respect of all things done or to be done after such assignment, as if it were named a party hereto, and the Licensor shall no longer be responsible hereunder.

14. The rights of the Licensee hereunder shall be perpetual, unless determined as herein provided.

15. The territory of the Licensee hereunder is the State of Pennsylvania.

The Licensee, in conjunction with the New Jersey Bell Telephone Company (the Licensee with respect to the State of New Jersey) shall have the right to use telephones, telephonic devices, apparatus, methods and systems licensed hereunder between any point in the Counties of Bucks, Chester, Delaware, Montgomery and Philadelphia (City and County), all in the State of Pennsylvania, and any point in the Counties of Atlantic, Burlington, Camden, Cape May, Cumberland, Gloucester, Mercer, Ocean and Salem, all in the State of New Jersey; also in conjunction with said New Jersey Bell Telephone Company, between any point in the Counties of Adams, Berks, Blair, Bradford, Cameron, Carbon, Centre, Clinton, Columbia, Cumberland, Dauphin, Elk, Erie, Franklin, Fulton, Huntingdon, Juniata, Lackawanna, Lancaster, Lebanon, Lehigh, Luzerne, Lycoming, McKean, Mifflin, Monroe, Montour, Northampton, Northumberland, Perry, Pike, Potter, Schuylkill, Snyder, Sullivan, Susquehanna, Tioga, Union, Warren, Wayne, Wyoming, York, and that portion of Clearfield County not included within a radius of five (5) miles from the Post Office in the City of Dubois, all in the State of Pennsylvania, and any point in the Counties of Hunterdon and Warren, in the State of New Jersey.

The Licensee, in conjunction with The Diamond State Telephone Company (the Licensee with respect to the State of Delaware), shall also have the right to use telephones, telephonic devices, apparatus, methods and systems licensed hereunder to transact business between any point in the Counties of Bucks, Chester, Delaware, Montgomery and Philadelphia (City and County), all in the State of Pennsylvania, and any point in the territory of said The Diamond State Telephone Company.

IN WITNESS WHEREOF, the parties hereto have caused their respective corporate seals to be hereto affixed and these presents to be

subscribed in their names and behalf by their respective officers thereunto duly authorized.

AMERICAN TELEPHONE AND TELEGRAPH Co,
By C. P. COOPER, *Vice President.*

C. M. B.

Attest:

[SEAL]

A. A. MARSTERS,
Secretary.

THE BELL TELEPHONE CO. OF PENNSYLVANIA,
By L. H. KINNARD, *President.*

Attest:

[SEAL]

J. H. CROSMAN, Jr.,
Secretary.

APPENDIX A

Average revenue per out message		Messages from offices where the toll operating is done by—	
Over	But not over	American Co.	Associated companies
		<i>Commission per out message</i>	<i>Commission per out message</i>
-----	\$0. 75	\$0. 112	\$0. 290
\$0. 75	. 80	. 113	. 295
. 80	. 85	. 114	. 300
. 85	. 90	. 115	. 305
. 90	. 95	. 116	. 310
. 95	1. 00	. 117	. 315
1. 00	1. 05	. 118	. 320
1. 05	1. 10	. 118	. 325
1. 10	1. 15	. 119	. 330
1. 15	1. 20	. 119	. 335
1. 20	1. 25	. 120	. 340
1. 25	1. 30	. 120	. 345
1. 30	1. 35	. 121	. 350
1. 35	1. 40	. 121	. 355
1. 40	1. 45	. 122	. 360
1. 45	1. 50	. 122	. 365
1. 50	1. 60	. 123	. 370
1. 60	1. 70	. 124	. 375
1. 70	1. 80	. 125	. 380
1. 80	1. 90	. 126	. 385
1. 90	2. 00	. 127	. 390
2. 00	2. 12½	. 129	. 400
2. 12½	2. 25	. 129	. 400
2. 25	2. 37½	. 131	. 410
2. 37½	2. 50	. 131	. 410
2. 50	2. 75	. 132	. 415
2. 75	3. 00	. 133	. 420
3. 00	3. 25	. 134	. 425
3. 25	3. 50	. 135	. 430
3. 50	3. 75	. 136	. 435
3. 75	4. 00	. 137	. 440
4. 00	4. 50	. 138	. 450
For each increase of \$0.50 add-----		. 001	. 005

APPENDIX 8

COURT AND COMMISSION CASES INVOLVING THE LICENSE CONTRACT
SINCE SMITH v. ILLINOIS BELL TELEPHONE COMPANY

282 U. S. 133, P. U. R. 1931A, 1 (1930)

[Arranged alphabetically by jurisdictions]

Chesapeake and Potomac Tel. Company v. Public Utilities Comm., 62 Wash. Law Rep. 486, 490 (D. C. Sup. Ct. 1934) (upheld order of Commission directing capitalization of portion of license contract payment, but overruled Commission's disallowance of part of remainder); same case before the Public Utilities Commission, P. U. R. 1931E, 193, 200; 4 P. U. R. (N. S.) 346, 353-355 (1934).

City of Los Angeles v. Southern California Tel. Co., 14 P. U. R. (N. S.) 252, 269, N. 18 (Calif. R. R. Comm. 1936) (city made no issue of license payment, and it was included in the operating expenses).

Southern Bell Tel. and Tel. Company v. Georgia Public Serv. Comm., 2 P. U. R. (N. S.) 234, 237-239, 240 (N. D. Ga. 1933) ("a disallowance of 50 percent of the payments * * * under the contract, which we think complainant has failed to justify * * *").

Illinois Bell Tel. Co. v. Gilbert, 3 Fed. Supp. 595, P. U. R. 1933E, 301, 313-316 (N. D. Ill. 1933) (cost of holding funds available and taxes disallowed); reversed on other grounds, *Lindheimer v. Illinois Bell Tel. Co.*, 292 U. S. 151 (1934).

Chesapeake & Potomac Tel. Co. of Baltimore City v. West, 7 Fed. Supp. 214, 3 P. U. R. (N. S.) 241, 268, N. 15 (1934) (Fairness of 1½ percent payment not challenged by the Commission in this case); aff'd, without mention of the license contract, *West v. Chesapeake & Potomac Telephone Co. of Baltimore City*, 295 U. S. 662 (1935).

Re Customers of New England Tel. and Tel. Co., 5 P. U. R. (N. S.) 333, 337-338 (Massachusetts Department of Public Utilities, 1934) ("not satisfied that it [the license contract] was detrimental to the New England Telephone and Telegraph Company"); following a previous decision of the Department of Public Utilities involving the same company, P. U. R. 1925E, 739, 746-748.

Re Michigan Bell Tel. Co., 10 P. U. R. (N. S.) 149, 199, 212-216 (Michigan Public Utilities Commission, 1935) (critical comment; matter was still under consideration).

Re Northwestern Bell Tel. Co., 19 P. U. R. (N. S.) 455, 458-459 (Minnesota Railroad and Warehouse Commission, 1937) ("The propriety and legality of this charge is questionable and is now under investigation by the Federal Communications Commission").

Re New York Tel. Co., 14 P. U. R. (N. S.) 443, 452 (N. Y. Public Service Commission, 1936) ("It is possible that a thorough investigation of the * * * [License payments] might result in some reduction in operating expenses * * *").

Ohio Bell Tel. Co. v. Public Utilities Comm. of Ohio, 131 Oh. St. 539, 3 N. E. (2d) 475, 15 P. U. R. (N. S.) 443, 471 ff. (1936), affirming Ohio Public Utilities Commission's disallowance of certain items, 2 P. U. R. (N. S.) 113, 150 ff. (1934). State Supreme Court's decision reversed on other grounds in *Ohio Bell Tel. Co. v. Public Utilities Comm.*, 301 U. S. 292 (1937).

Re Southwestern Bell Tel. Co., 9 P. U. R. (N. S.) 113, 122, 142 (Okla. Corp. Comm. 1935) (1½ percent "management fee" allowed, but

Commission did not pass upon reasonableness of such charge); opinion affirmed by State Supreme Court, 71 P. (2d) 747, 19 P. U. R. (N. S.) 391 (1937) (license contract fee not mentioned); app'l dismissed, U. S. Sup. Ct., Feb. 28, 1938.

Re Southwestern Bell Tel. Co., 16 P. U. R. (N. S.) 1, 7 (Okla. Corp. Comm. 1936) ("management fee" allowed).

Re Pacific Tel. and Tel. Co., 8 P. U. R. (N. S.) 61, 88 ff. (Oregon Public Utilities Commissioner, 1934) (disallowed license fee as an operating expense; services to Oregon company and cost of performing those services not proved). Preliminary restraining order granted by State Circuit Court, 6 P. U. R. (N. S.) 462 (1934). Public Utilities Commissioner reaffirmed findings and order, 8 P. U. R. (N. S.) 111 (1935). Circuit Court enjoined Commissioner's order reducing rates, but Commissioner's ruling disallowing license fee was sustained because of failure of proof as to payment for extra-contractual services, value and cost of contract services. 13 P. U. R. (N. S.) 337, 386-389 (1936). Circuit Court's ruling on license contract payment affirmed. *Pacific Tel. & Tel. Co. v. Wallace*, 23 P. U. R. (N. S.) 65 (1938).

City of Memphis v. Southern Bell Tel. and Tel. Co., 6 P. U. R. (N. S.) 464, 475-476 (Tenn. R. R. and P. U. Comm. 1934) (gross revenue basis "economically unsound," but 1½ percent of gross revenues allowable as charge to operating expenses).

Re Wisconsin Tel. Co., 13 P. U. R. (N. S.) 224, 259-268 (Wisconsin Public Service Comm., 1936) (American company did not prove the cost to it of rendering license contract services); reversed, *Wisconsin Tel. Co. v. Public Service Comm. of Wisconsin*, Dane County Circuit Court, Feb. 24, 1938.

APPENDIX 9

American Telephone & Telegraph Co. license-contract receipts and alleged costs (including the associated companies and long-lines department) 1923-1936, inclusive

Year	Alleged license contract costs ¹	License-contract receipts	Amounts by which receipts exceeded alleged costs ²
(a)	(b)	(c)	(d)
1923 ³	\$21,564,393	\$25,901,548	\$4,337,155
1924	24,463,992	28,377,701	3,913,709
1925	27,551,431	31,965,628	4,414,197
1926	28,672,565	31,546,703	2,874,138
1927	29,582,489	34,242,683	4,660,194
1928	21,821,912	19,204,161	(2,617,751)
1929	22,950,405	15,878,523	(7,071,882)
1930	28,789,220	16,511,139	(12,278,081)
1931	27,669,530	16,135,455	(11,534,075)
1932	24,715,639	14,475,237	(10,240,402)
1933	22,323,034	13,059,550	(9,263,484)
1934	22,029,066	12,957,975	(9,071,091)
1935	22,595,167	13,819,198	(8,775,969)
1936	23,559,679	15,211,783	(8,347,896)
Total	348,288,522	289,287,284	(59,001,238)

¹ The alleged costs were taken from statements prepared by the American Co. for rate cases of certain associated companies.

² Parentheses indicate that receipts were less than alleged costs.

³ 1923 is the first year for which alleged costs are stated because that was the earliest year involved in the pending rate cases to which the decision in *Smith v. Illinois Bell Telephone Company*, 282 U. S. 133 (1930), was applied. The amounts given as alleged costs were taken from rate-case statements of license-contract costs prepared by the American Co.

APPENDIX 9

SCHEDULE 1

American Telephone & Telegraph Co. (excluding long-lines department)

[Compilation of American Co.'s computation of costs incurred in rendering license-contract services and amounts thereof allocated to Southern Bell Telephone & Telegraph Co., State of Louisiana, year 1936]

Particulars	Total costs incurred by departments rendering license-contract services (a)	Amounts in column (a) allocated to "nonlicense" (b)	Expenses in connection with F. C. C. investigation of A. T. & T. Co. (c)	Balance costs allocated to rendering license-contract services to licensee companies (including Bell Telephone Co. of Canada) and long lines (d=a-b-c)	Costs in column (d) allocated to rendering license-contract services to—		Costs in column (f) allocated to rendering license-contract services to Southern Bell Telephone & Telegraph Co., State of Louisiana (g)
					Long-lines department	Licensee companies (including Bell Telephone Co. of Canada)	
Departmental costs:							
Development and research.....	\$9,735,172	\$411,700	\$74,099	\$9,249,373	\$897,189	\$8,352,184	\$70,188
Operation and engineering.....	3,763,267	157,989	318,462	3,286,846	233,366	3,053,480	28,092
Operation, general.....	322,163	27,343	71,386	223,434	20,779	202,655	1,763
Personnel:							
Personnel relations.....	235,212	2,845	7,124	225,243	9,685	215,558	2,220
Public relations.....	14,164	120	14,044	14,044	1,067	12,977	118
Benefit and medical, general staff.....	160,175	3,204	5,766	151,205	6,502	144,703	1,491
Benefit and medical (except general staff).....	361,651	16,270	970	344,311	26,168	318,143	2,865
Total.....	771,102	22,319	13,980	734,803	43,422	691,381	6,724
Information:							
Specific services.....				33,535	33,535		
Other.....				1,179,606	103,805		
Total.....	1,229,336	7,200	8,995	1,213,141	137,340	1,075,801	9,467
Legal:							
Specific services.....				32,188	32,188		
Other.....				846,981	74,534		
Total.....	1,207,053	82,907	244,977	879,169	106,722	772,447	6,798
Comptroller.....	1,695,462	95,223	166,410	1,433,829	108,971	1,324,858	12,066
Treasurer:							
Servicing securities.....	982,431	62,876	39,685	879,870	123,182	756,688	6,598
Other.....	229,266	10,317		218,949	16,640	202,309	1,841
Total.....	1,211,697	73,193	39,685	1,098,819	139,822	958,997	8,349

American Telephone & Telegraph Co. (excluding long lines department)—Continued

Particulars	Total costs incurred by departments rendering license-contract services	Amounts in column (a) allocated to "nonlicensees"	Expenses in connection with F. C. C. investigation of A. T. & T. Co.	Balance costs allocated to rendering license-contract services to licensee companies (including Bell Telephone Co. of Canada) and long lines (d=a-b-c)	Costs in column (d) allocated to rendering license-contract services to—		Costs in column (f) allocated to rendering license-contract services to Southern Bell Telephone & Telegraph Co., State of Louisiana (g)
					Long-lines department	Licensee companies (including Bell Telephone Co. of Canada)	
(a)	(b)	(c)	(d=a-b-c)	(e)	(f)	(g)	
Departmental cost—Continued.							
Secretary:							
Specific services				3,993	3,993		
Other				34,011	2,585		
Total	\$41,806	\$1,881	\$1,921	\$38,004	\$6,578	\$31,426	\$286
General service bureau	401,320	18,059	16,215	367,046	27,895	339,151	3,086
Sundry items (including administration)	580,889	26,140	100,583	454,166	34,517	419,649	3,819
Total departmental costs	20,959,297	923,954	1,056,713	18,978,630	1,756,601	17,222,029	189,698
Taxes:							
Massachusetts franchise	295			295		295	
New York excise	196,706						
New York franchise	747,102						
New York City personal property	1,331	42,655		905,234	68,798	836,436	7,612
Stamp and miscellaneous	2,750						
Social Security	66,145	2,977		63,168	5,559	57,609	524
Other—Specifically "nonlicensee"							
Federal capital stock	415,675						
Wisconsin privilege	4	471,832					
Canadian tax on Bell Telephone Co. of Canada dividends	56,153						
Total taxes	1,486,161	517,464		968,697	74,357	894,340	8,136
Cost (net) of carrying investment in physical property used in rendering license-contract services	31,129	1,401		29,728	2,259	27,469	250
Cost (net) incurred in holding funds available during year to meet cash requirements of licensee companies	13,138,387	10,668,371		2,470,016	165,491	2,304,525	21,893
Cost (net) of temporary financing	1,112,608			1,112,608		1,112,608	
Total costs incurred	36,727,582	12,111,190	1,056,713	23,559,679	1,998,708	21,560,971	180,877

* Exclusive of contingencies, e. g., claims for infringements.

APPENDIX 10

Bases of apportionments of license-contract costs to long lines and Louisiana area of Southern Bell Telephone & Telegraph Co., year 1936

Item of cost	Long lines	Southern Bell Telephone & Telegraph Co., State of Louisiana
DEPARTMENTAL COSTS		
Development and research.....	Plant in service.....	Plant in service.
Operation and engineering.....	Composite ratio of plant in service, employees, and expenses.	Same factors as for long lines plus stations.
Operation, general.....	Composite ratio of plant in service and total telephone revenues.	Composite ratio of plant in service and total telephone revenues.
Personnel:		
Personnel relations.....	Employees.....	Employees.
Benefit and medical, general staff.		
Benefit and medical, except general staff.		
Public relations.....	Composite ratio of plant in service, employees, expenses and total telephone revenues.	Same factors as for long lines plus stations.
Information:		
Specific services.....	Supervisory services performed in connection with sales advertising paid for directly by long lines.	None.
Other.....	Total telephone revenues.....	Total telephone revenues.
Legal:		
Specific services.....	Work performed directly for long lines.	None.
Other.....	Total telephone revenues.....	Total telephone revenues.
Treasurer:		
Servicing securities.....	Investment.....	Investment in stocks and bonds of, and advances to, Southern Bell Telephone & Telegraph Co., allocated to State of Louisiana on basis of plant in service.
Other.....	Composite ratio of plant in service, employees, expenses, and total telephone revenues.	Same factors as for long lines plus stations.
Comptroller.....	Composite ratio of plant in service, employees, expenses, and total telephone revenues.	Do.
General service bureau.....		
Sundry items (including administration).		
Secretary:		
Specific services.....	Work performed, relating chiefly to long-lines board meetings.	None.
Other.....	Composite ratio of plant in service, employees, expenses, and total telephone revenues.	Same factors as for long lines plus stations.
TAXES		
Massachusetts franchise.....	None.....	None.
New York excise.....	Composite ratio of plant in service, employees, expenses, and total telephone revenues.	Same factors as for long lines plus stations.
New York franchise.....		
New York City personal property.....		
Stamp and miscellaneous.....	Ratio of total department costs allocated to long lines to total departmental costs, excluding from each the billings from the Bell Telephone Laboratories.	Composite ratio of plant in service, employees, expenses, total telephone revenues, and stations.
Social Security.....		
FINANCIAL COSTS		
Cost (net) of carrying investment in physical property used in rendering license contract services.	Composite ratio of plant in service, employees, expenses, and total telephone revenues.	Same factors as for long lines plus stations.
Cost (net) incurred in holding funds. Available during year to meet cash requirements of licensee companies.	Composite ratio of plant in service and gross additions.	Same factors as for long lines.
Cost (net) of temporary financing....	None.....	None.

APPENDIX 10

SCHEDULE 2

Effect of 1936 license contract payments on ratio of net operating income to average investment in Telephone plant of licensee companies and long-lines department

Name of licensee company	(a)	(b)	(c)	(d)	Ratio of net operating income to average investment in telephone plant (e=d÷c)	Net operating income excluding license contract payments from operating expenses (f=b+d)	Ratio of adjusted net operating income to investment in telephone plant (g=f÷e)	Increase in ratio of net operating income to average investment in telephone plant resulting from elimination of license contract expense (h=g-e)
		Total license contract payments	Average investment in telephone plant	Net operating income	Percent		Percent	Percent
American Telephone & Telegraph Co.—long-lines department ¹		\$ 1,702,160	\$29,096,525	\$32,353,165	7.54	\$34,115,325	7.95	0.41
New York Telephone & Telegraph Co.		1,023,347	307,260,977	13,833,740	4.51	14,877,087	4.84	.33
Southern New England Telephone Co.		236,239	78,933,934	3,889,615	4.93	4,124,854	5.23	.30
New York Telephone Co.		2,794,089	756,350,493	37,872,723	5.01	40,666,812	5.38	.37
New Jersey Bell Telephone Co.		632,264	197,665,327	8,157,846	4.13	8,790,100	4.45	.32
Bell Telephone Co. of Pennsylvania		907,527	307,890,461	16,114,282	5.23	17,021,809	5.53	.30
Diamond State Telephone Co.		28,869	8,381,801	471,924	5.50	500,793	5.84	.34
The Chesapeake & Potomac Telephone Co.		145,958	38,461,211	2,192,510	5.70	2,341,468	6.09	.39
The Chesapeake & Potomac Telephone Co. of Baltimore City		198,443	50,228,490	3,106,982	6.19	3,305,425	6.58	.39
The Chesapeake & Potomac Telephone Co. of Virginia		122,878	34,036,171	2,272,758	6.98	2,395,696	7.04	.36
The Chesapeake & Potomac Telephone Co. of West Virginia		81,253	24,796,533	997,429	4.02	1,078,682	4.35	.33
Southern Bell Telephone Co.		799,099	236,327,979	12,477,855	5.28	13,276,954	5.62	.34
Ohio Bell Telephone Co.		545,965	168,332,746	10,278,908	6.08	10,824,873	6.41	.33
The Cincinnati & Suburban Bell Telephone Co.		133,375	40,099,530	2,227,111	5.57	2,360,486	5.90	.33
Michigan Bell Telephone Co.		500,136	173,720,742	9,947,100	5.73	10,447,236	6.01	.28
Indiana Bell Telephone Co.		166,137	47,150,621	2,911,910	6.18	3,078,047	6.53	.35
Wisconsin Telephone Co.		231,458	78,610,393	3,024,982	3.85	3,256,440	4.14	.29
Illinois Bell Telephone Co.		1,135,563	299,894,053	14,454,594	4.83	15,620,157	5.21	.38
Northwestern Bell Telephone Co.		4,503,899	133,126,469	6,600,687	4.96	7,104,586	5.34	.38
Southwestern Bell Telephone Co.		1,135,307	331,086,252	20,293,528	6.12	21,428,835	6.46	.34
The Mountain States Telephone & Telegraph Co.		97,711	97,711,979	4,068,200	4.16	4,377,236	4.48	.32
The Pacific Telephone & Telegraph Co. (System)		1,462,390	434,458,054	23,353,580	5.38	24,815,970	5.71	.33
Total		\$ 14,857,382	4,274,641,741	230,951,429	5.40	245,808,811	5.75	.35

- ! Average of balances at opening and end of year, excluding construction work in progress, without any deduction for depreciation.
- ! The long lines department is not a separate company, but is a department of American Telephone & Telegraph Co.
- ! This amount includes a 1½ percent payment from the Transpacific Communication Co. amounting to \$529, and \$66,560 not charged until 1937.
- ! This amount includes \$90,024 representing three-quarters of a 1½ percent payment from Tri-State Telephone & Telegraph Co.
- ! This total does not equal the total license contract payments of \$15,212,162 received by the American Co. for 1936 principally because the payment of \$354,781 made by Bell Telephone Co. of Canada is not included.

Source: Annual reports, form M, filed with Federal Communications Commission, except payments by long-lines department which includes an adjustment made in 1937.

APPENDIX 11

LEGAL STATUS OF SEPARATION OF PROPERTY, REVENUES, AND EXPENSES BETWEEN INTERSTATE AND INTRASTATE SERVICES AND BETWEEN TOLL AND EXCHANGE

Controversies between Bell System companies and regulatory authorities on the subject of exchange and toll or intrastate and interstate apportionments have centered principally on the definition of what telephone services are to be covered by the exchange and toll rates. The Bell Telephone companies (except the New York Telephone Co.) contended that the regular exchange rates cover the use of the exchange plant and its operations in connection with both the exchange and the toll services, the toll rates being defined to compensate the company for the use of the toll plant only. Recently State commissions have been somewhat divided in attitude, but as a whole have leaned toward the opinion that exchange rates should compensate the company for its exchange service and that toll rates should carry all costs of the toll service including the cost of the toll use of exchange plant.

During the period 1920 to 1930, the board-to-board method was approved in the majority of rate cases. It was specifically upheld by regulatory bodies in South Carolina,¹ Nebraska,² Minnesota,³ Indiana,⁴ Michigan,⁵ Wisconsin,⁶ and Rhode Island.⁷ A committee of the National Association of Railroad and Utility Commissioners, in a brief presented to the Interstate Commerce Commission, stated that interstate toll rates were uniformly on that basis.⁸

On the other hand, the California Commission appears to have established local rates in Los Angeles on a station-to-station basis⁹ and the Oregon,¹⁰ Virginia,¹¹ and Missouri.¹² Commissions expressed leanings toward that method although they do not appear to have established specific rates in accordance therewith.

During this period, the New York Telephone Co. presented its case for increased exchange rates in New York State to both the public service commission¹³ and the Federal court¹⁴ on the basis of a station-to-station segregation of toll and exchange property and expenses. No apportionment of exchange revenues to the toll service was made, since the company regarded the toll rates as providing compensation for the cost of intrastate toll service from subscriber's station to subscriber's station. A different treatment was given by the company to its interstate toll service over the lines of the long-lines department of the American Telephone & Telegraph Co., since here it was required by its contract with the American Co. to obtain compensation for the use of parts of the exchange plant for interstate long-distance calls from

¹ *Re Rock Hill Telephone Company*, P. U. R. 1928 E, 221.

² *Re Northwestern Bell Telephone Company*, P. U. R. 1923 B, 112.

³ *Re Northwestern Bell Telephone Company*, P. U. R. 1922 C, 703.

⁴ *Re Indiana Bell Telephone Company*, P. U. R. 1922 C, 348.

⁵ *Re Michigan State Telephone Company*, P. U. R. 1923 A, 30.

⁶ *Re Wisconsin Telephone Company*, P. U. R. 1925 D, 661.

⁷ *Public Utilities Commission v. New England Telephone and Telegraph Company*, P. U. R. 1926 C, 307.

⁸ Depreciation Charges of Telephone Companies, 118 I. C. C. 295, 328.

⁹ *City of Los Angeles v. Southern California Telephone Company*, 14 P. U. R. (N. S.) 252.

¹⁰ *Re Pacific Telephone and Telegraph Company*, P. U. R., 1924 D, 39.

¹¹ *Re Chesapeake and Potomac Telephone Company*, P. U. R. 1928 E, 481.

¹² *City of Kansas v. Kansas City Telephone Company*, P. U. R. 1922 A, 466.

¹³ *Re New York Telephone Company*, P. U. R. 1926 E, 1.

¹⁴ *New York Telephone Company v. Prendergast, et al.*, 36 Fed. (2d) 54.

the exchange rates. The New York Commission had rejected the station-to-station method in 1921,¹⁵ and adhered to the theory that rates should be based on the State-wide rate of return produced by the company's business, without giving effect to the costs of any individual classes of service.

The Supreme Court had occasion to consider this question in 1930 when the Smith decision in the *Chicago Rate case* was handed down.¹⁶ A Federal district court in that case had reviewed the decisions in other cases and had decided in favor of the board-to-board method.¹⁷ The Supreme Court, however, held that that method placed an undue burden on the intrastate users of the service in favor of the interstate users and that it failed to recognize the respective fields of jurisdiction of Federal and State regulatory bodies. The Supreme Court ordered that segregations of plant, revenues, and expenses be made for the years covered by the litigation in order to determine the intrastate use of the Chicago property. The findings made by the Federal court assumed that the rates in dispute as well as the entire rate structure had been on a board-to-board basis and consequently allocated a portion of the exchange revenues to the interstate service following the allocation of plant and expenses on a station-to-station basis. There was no dispute as to plant and expenses, but the Illinois commission and the city of Chicago strenuously protested any allocation of revenues on several grounds, among them being the contentions that the rate-making history of the company proved that rates in Chicago had always been on a station-to-station basis and that the Illinois commission had no authority to fix rates for interstate service. The Supreme Court did not settle this conflict of views in its final disposition of the case, nor has it since had occasion to do so.

The 1930 decision of the Supreme Court in the *Chicago case* has been interpreted differently. The Federal court, which made the findings required by the Supreme Court in this case, proceeded, as indicated above, on the assumption that rates in the past had been made on a board-to-board basis and that a change to the station-to-station basis necessitated an apportionment to the toll business of exchange revenues as well as of exchange plant and expenses insofar as consideration of the adequacy of existing and past rates was concerned.¹⁸ On the other hand, a majority of regulatory bodies have held that present and past rates and the results obtained therefrom are to be viewed as though the rates themselves had been established on a station-to-station basis. This view was upheld by a Federal district court in the *San Antonio case*.¹⁹ The circuit court of appeals in that case did not decide the question, but pointed out the desirability of uniform action on the part of city, State, and Federal bodies in order to avoid injustice which might result from inconsistent treatment.²⁰

In the *San Antonio case* the company asserted as a right of management the fixing of the unit of sale of its service and claimed that the unit of sale of exchange service in the past had always included the toll use of the exchange plant.

¹⁵ *Buck v. New York Telephone Company*, P. U. R. 1921 E, 798.

¹⁶ *Smith v. Illinois Bell Telephone Company*, 282 U. S. 133.

¹⁷ *Illinois Bell Telephone Company v. Moynihan*, 34 Fed. (2d) 77.

¹⁸ *Illinois Bell Telephone Company v. Gilbert*, 3 Fed. Suppl. 595.

¹⁹ *Southwestern Bell Telephone Company v. City of San Antonio et al.*, 2 Fed. Suppl. 611.

²⁰ *Southwestern Bell Telephone Company v. City of San Antonio et al.*, 75 Fed. (2d) 880.

The view that no apportionment to toll of the revenues from existing exchange rates could be justified was taken by the Oregon commission,²¹ but the results were disapproved by an Oregon county court on the ground that the commission had juggled revenues and expenses between the two branches of the company's business in such a way as to decrease the toll income, which was already inadequate. The Wisconsin commission²² has prescribed exchange rates to cover the exchange service only, rejecting the company's claim that the exchange rates should compensate it for its exchange service plus a portion of its toll service. Similarly, the Louisiana commission²³ rejected an apportionment of exchange revenues to the interstate business to allow for the use of the exchange plant in connection with the interstate toll calls. The commission's decision was upheld by the Louisiana Supreme Court on March 1, 1937. The first two of these cases are still in litigation, and the rates prescribed by the commissions have not yet gone into effect. In Tennessee the representatives of four cities seeking an exchange-rate reduction took a stand similar to that of the Wisconsin and Louisiana commissions, but the Tennessee commission²⁴ did not pass on the question.

The Michigan commission²⁵ rejected the Michigan Bell Co.'s presentation of both the station-to-station and the board-to-board methods on the grounds that no allocation, according to proportionate time in use or relative occupancy of jointly used property, can produce equitable results. The commission described the relative value of service method according to which each service must bear its own out-of-pocket costs plus a share of the joint costs to be determined in accordance with the relative value of the different services and subject, of course, to the provision that the over-all return will not exceed a reasonable figure. Rates were not made on this basis, the proceeding being limited to a rejection of the company's demand for increased rates. At the same time, the commission stated very forcibly that it rejected the company's attempt to apportion a part of the exchange revenues into interstate commerce, a field considered by the commission at the time (1935) to be substantially unregulated. The commission held that exchange rates in Michigan cover nothing but the local use of the exchange plant. On the latter point, the Michigan commission concurred with the views of the Wisconsin, Louisiana, and Oregon commissions.

The California commission in the *Los Angeles case*²⁶ made station-to-station apportionments of plant and expenses, but refused to make any apportionment of exchange revenues to toll on the ground that exchange rates in Los Angeles had been established on a station-to-station basis in the past.

²¹ *Re Pacific Telephone and Telegraph Company*, 8 P. U. R. (N. S.) 111.

²² *In the Matter of the Statewide Investigation, etc.*, 13 P. U. R. (N. S.) 224.

²³ *Louisiana Public Service Commission v. Southern Bell Telephone and Telegraph Company*, 8 P. U. R. (N. S.) 1.

²⁴ *Re City of Memphis et al. v. Southern Bell Telephone and Telegraph Co.*, 6 P. U. R. (N. S.) 464.

²⁵ *Re Michigan Bell Telephone Company*, 10 P. U. R. (N. S.) 149.

²⁶ *City of Los Angeles v. Southern California Telephone Co.*, 14 P. U. R. (N. S.) 252.

APPENDIX 12

Comparison of Bell System patents to total existing patents in 4 representative Patent Office classes, Dec. 31, 1934

TELEPHONE

Patent Office classification			Existing patents	Bell System patents	
Class	Subclass	Title	Number	Number owned	Number unused
178	44	Telegraphy—Systems—Wave Transmission.....	739	531	326
	45	Telegraphy—Systems—Wave Transmission—Loaded Circuit.....	157	105	70
179	6.3	Telephony—Systems—Check Controlled.....	99	48	17
	7.1	Telephony—Systems—Register—Time Controlled.....	74	31	24
	8.5	Telephony—Systems—Register—Central Party Line.....	39	27	25
	9	Telephony—Systems—Register—Central Automatic.....	110	56	29
	15	Telephony—Systems—Multiplex.....	160	131	82
	16	Telephony—Systems—Automatic.....	104	34	22
	17	Telephony—Systems—Automatic—Polystation Lines.....	104	17	9
	18	Telephony—Systems—Automatic—Percentage.....	935	346	255
	27	Telephony—Systems—Automatic—Semiautomatic.....	876	472	256
	27.5	Telephony—Systems—Automatic—Selective Switches.....	14	2	2
	27.51	Telephony—Systems—Automatic—Selective—Rotary Sing. Level.....	44	24	21
	27.52	Telephony—Systems—Automatic—Selective—Multi-directional.....	68	40	37
	27.53	Telephony—Systems—Automatic—Selective—Panel.....	33	18	13
	27.54	Telephony—Systems—Automatic—Selective—Cross-bar.....	98	77	76
	101	Telephony—Telephones.....	37	8	6
	103	Telephony—Telephones—Combined Rec. & Trans.—Hand.....	30	9	4
	114	Telephony—Telephones—Magnetic.....	70	10	3
	115	Telephony—Telephones—Magnetic—Diaphragm.....	118	10	7
	115.5	Telephony—Telephones—Magnetic—Diaphragm—Movable Actuating Coil.....	62	19	5
	121	Telephony—Transmitters.....	47	8	6
	122	Telephony—Transmitters—Granular.....	70	17	10
	170	Telephony—Repeaters.....	213	175	101
	171	Telephony—Relays (Amplifiers).....	1,276	363	194
Total.....			5,577	2,578	1,600
Percent of existing patents.....				46.2	28.7
Percent of owned patents.....					62.1

TELEGRAPHY

178	2	Telegraphy—Systems.....	149	87	57
	4	Telegraphy—Systems—Automatic—Printing.....	44	14	8
	4.1	Telegraphy—Systems—Automatic—Printing—Remote Control.....	49	33	16
	5	Telegraphy—Systems—Automatic—Facsimile.....	79	19	14
	6	Telegraphy—Systems—Automatic—Facsimile—Optical.....	365	49	43
	7	Telegraphy—Systems—Automatic—Facsimile—Photo. Recorder.....	126	53	36
	17	Telegraphy—Systems—Automatic—Transmitters or Recorders.....	78	25	17
	17.5	Telegraphy—Systems—Automatic—Transmitters or Recorders Storing.....	31	12	7
	22	Telegraphy—Systems—Secret.....	45	25	21
	23	Telegraphy—Systems—Printing.....	26	13	7
	27	Telegraphy—Systems—Printing—Selectors—Page.....	48	38	12
	33	Telegraphy—Systems—Printing—Selectors.....	62	43	25
	34	Telegraphy—Systems—Printing—Selectors—Type Wheel Recorders.....	23	10	8
	51	Telegraphy—Systems—Multiplex—Resonant.....	81	55	42
	52	Telegraphy—Systems—Multiplex—Rotary Distributor.....	37	13	12
	53	Telegraphy—Systems—Multiplex—Rotary Distributor—Synchronizers.....	68	33	17
	53.1	Telegraphy—Systems—Multiplex—Rotary Distributor—Synchronizers Start Stop.....	16	9	7
	58	Telegraphy—Systems—Duplex.....	38	25	22
	60	Telegraphy—Systems—Duplex—Bridge.....	-----	7	6
	63	Telegraphy—Systems—Cable or Capacity.....	137	88	57
	69	Telegraphy—Systems—Line Clearance, etc.....	90	63	31
	69.5	Telegraphy—Systems—Line Clearance—Synchronizers.....	67	13	12

Comparison of Bell System patents to total existing patents in 4 representative Patent Office classes, Dec. 31, 1934—Continued

TELEGRAPH—Continued

Patent Office classification			Existing patents	Bell System patents	
Class	Subclass	Title	Number	Number owned	Number unused
	69. 6	Telegraphy—Systems—Line Clearance—Call.....	9	8	4
	70	Telegraphy—Repeaters.....	57	22	19
	71	Telegraphy—Repeaters—Automatic.....	116	74	40
		Total.....	1, 841	832	540
		Percent of existing patents.....		45. 2	29. 3
		Percent of Bell System owned patents.....			65. 0

RADIO

250	1	Radiant Energy—Miscellaneous.....	41	3	1
	2	Radiant Energy—Teledynamic.....	168	35	24
	6	Radiant Energy—Teledynamic—Radio Telephony.....	206	73	38
	8	Radiant Energy—Teledynamic—Radio Telegraphy.....	208	22	14
	9	Radiant Energy—Teledynamic—Radio Multiplex.....	194	83	58
	10	Radiant Energy—Teledynamic—Radio Cooperative Wave.....	40	9	9
	11	Radiant Energy—Teledynamic—Radio Directive.....	334	56	43
	14	Radiant Energy—Teledynamic—Radio Portable Sets.....	125	7	5
	15	Radiant Energy—Teledynamic—Radio Repeaters.....	31	14	13
	17	Radiant Energy—Teledynamic—Apparatus—Transmitters.....	319	40	20
	19	Radiant Energy—Teledynamic—Apparatus—Transmitters Controllers.....	108	9	8
	20	Radiant Energy—Teledynamic—Apparatus—Receivers.....	888	105	75
	27	Radiant Energy—Teledynamic—Apparatus—Receivers—Gaseous Element.....	536	57	31
	27. 5	Radiant Energy—Teledynamic—Apparatus—Receivers—Gaseous Tubes.....	1, 769	230	85
	33	Radiant Energy—Teledynamic—Apparatus—Antennae.....	331	27	19
	36	Radiant Energy—Oscillation Circuits.....	483	105	68
		Total.....	5, 781	875	511
		Percent of existing patents.....		15. 1	8. 8
		Percent of owned patents.....			58. 3

SOUND RECORDING AND REPRODUCING

88	16. 2	Optics—Motion Picture—with Sound Producers.....	287	18	11
	16. 6	Optics—Motion Picture—Multiplex.....	137	7	7
	61	Optics—Light Valves.....	62	11	6
179	100. 3	Telephony—Telegraphones—Photographic.....	348	33	18
	100. 31	Telephony—Telegraphones—Photographic—Slot Units.....	43	3	3
	100. 4	Telephony—Telegraphones—Composition.....	144	36	24
	100. 41	Telephony—Telegraphones—Composition Recorders and Reproducers.....	229	20	9
	101	Telephony—Telephones.....	37	8	6
	103	Telephony—Telephones Comb. Rec. and Trans.—Hand.....	30	9	4
	106	Telephony—Telephones Condenser.....	9	2	1
	107	Telephony—Telephones Audiphones.....	61	11	4
	111	Telephony—Telephones Electrostatic.....	56	4	2
	113	Telephony—Telephones Non-diaphragm.....	11	3	3
	114	Telephony—Telephones Magnetic.....	70	10	3
	115	Telephony—Telephones Magnetic Diaphragm.....	118	10	7
	115. 5	Telephony—Telephones Magnetic Movable Actuating Coil.....	62	19	5
	121	Telephony—Transmitters.....	47	8	6
	122	Telephony—Transmitters—Granular.....	70	17	10
	171	Telephony—Relays (Amplifiers).....	1, 276	362	193
250	27. 5	Radiant Energy—Gaseous Element—Tubes.....	1, 769	230	85
		Total.....	4, 866	821	407
		Percent of existing patents.....		16. 9	8. 4
		Percent of owned patents.....			49. 6

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INDEX

For purposes of brevity the following abbreviations are used in the index:

American Telephone & Telegraph Co.....	Amer. Co.
American Bell Telephone Co.....	Amer. Bell.
Associated Bell Telephone companies.....	Assoc. Cos.
Bell Telephone System.....	System
Bell Telephone Laboratories, Inc.....	B. T. L.
Electrical Research Products, Inc.....	E. R. P. I.
Federal Communications Commission.....	F. C. C.
Radio Corporation of America.....	R. C. A.
Western Electric Co., Inc.....	W. E.
Western Union Telegraph Co.....	W. U.
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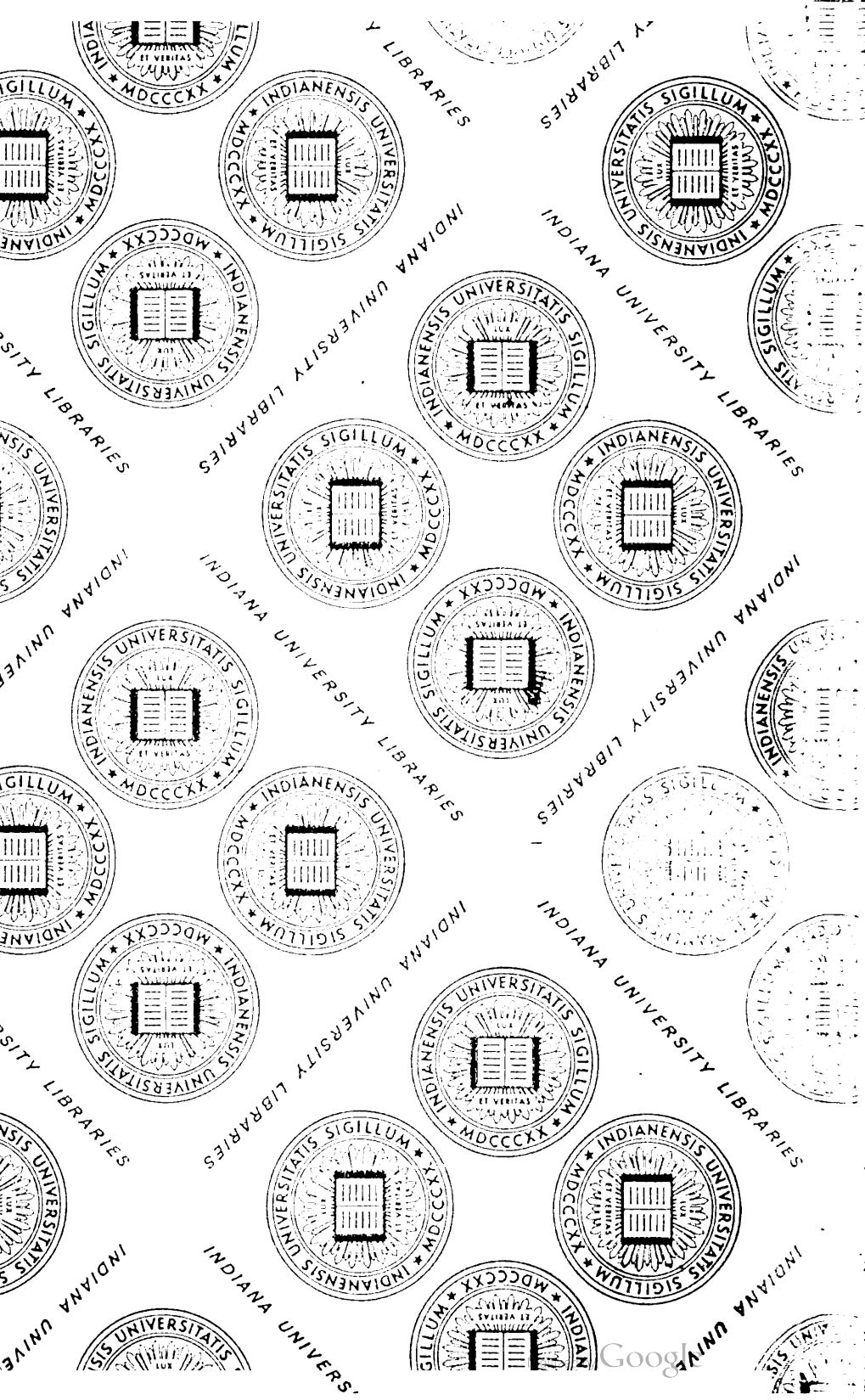
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